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A PLEA FOR THE MORE FREQUENT SCIENTIFIC EMPLOYMENT OF PHYSICAL THERAPEUTICS *

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The methods and practices of physical therapeutics have suffered so much discredit through extravagant and unscientific theories and from exaggerated statements of misguided enthusiasts that one hesitates to offer further contributions on the subject, knowing how critically any claim will be received, regardless of whether or not it bears evidence of modest observation or practical merit. In discussing this subject, my apology is for the attempt, rather than the topic.

Physical therapeutics, as comprehended in this discussion, applies to our knowledge of the best care for the sick. I admit the technical vagueness of this definition and, in explanation, state merely that its purpose is to bring into the discussion the practical, as well as the scientific, side of the question. Viewed from this standpoint, a little thought will make it easily comprehensible.

In the time allotted I can do no more than very briefly refer to some of the well-known means employed in the restoration and preservation of health and the discussion will deal more particularly with reference to toxic and metabolic perversions occurring from untoward physical, chemical and psychic influences, which are more amenable, in part at least, to physical than to chemical therapeutics. I take it for granted that those to whom this paper is addressed are already generally familiar with the usual forms of physical therapeutics, though not necessarily conversant with the detailed application; such, at least, has been my impression concerning the busy practitioner.

Systematic functional activity may be stimulated, and otherwise energized, by various mechanical, manual and natural forces; but, if improperly used, these forces are as potent in producing harmful results as they are in producing wholesome benefits when scientifically employed. It has also been strongly contended that function should be the guide for the exercise of the parts, as environment contributed only to promoting general development; but, in this contention, the relation of impaired physiologic to pathologic function must be a matter of personal investigation and judgment. It is regrettable that, outside of sanatoriums, comparatively little attention is paid by the profession in this country to the scientific direction of any of the well-known physical therapeutic methods. For instance, when a physician desires to employ massage as a therapeutic agent he does little more than call a masseur, direct that he visit Mr. A. and give him a general massage-treatment, thinking, thereafter, very little of the responsibility attached to explicit directions in the case. While this statement is admittedly somewhat overdrawn, nevertheless it emphasizes my point that too little attention is given to definite directions, in definite conditions, for definite purposes.

It therefore is a common occurrence for both physician and patient to be disappointed at the result of massage-treatment, when too often the fault is due chiefly to routine application; in no other therapeutic system is definite instruction, with reference to principle and detail, more necessary than in physical therapy, and the strictest attention to both will probably avail little, unless the diagnosis also be complete.

It is these facts, which have been so forcibly presented to me during the past twenty years of my practice in this city, that have made me venture this plea to our profession and urge a more careful and scientific study of the application of these forces as therapeutic agents.

The ever-changing and complicated conditions, physical and social, which are the outgrowth of a complex civilization, occasion various disturbed functional and metabolic changes in the human economy. These manifest conditions have no pathologic or microbic cause to which a definite responsibility may be attached, and are too often the results of mere accidental and indeterminate disturbances over which one has little control, and to which the administration of pharmacotherapeutic agents can give little assistance.

Therefore, I particularly direct attention to this class of physical, emotional and functional derangements, for which physical therapeutics are most happily helpful in the reestablishment of the normal functional and systemic balance. They are applicable and particularly useful in the convalescent period of various infections and other debilitated conditions, from whatever cause, in which muscular activity, physiologic forces and nervous energy have suffered from the processes of disease. They are also most helpful in stimulating the fagged and exhausted forces resulting from chronic diseases, and offer our best contribution in salutary therapeutics, so much needed in the incurable and malignant maladies.

It is little wonder that the people, in this day of general public education along scientific lines, speak complainingly of the failure of medical science, or of its chief representatives, the physicians, to recognize and direct properly the different systems and various methods of physical therapy, which are, in too many instances, still administered by the irresponsible irregulars and pathists.

Since physicians know so well the efficiency of massage, electricity, calisthenic exercises and hydrotherapy, when scientifically applied, in correcting the undeveloped

* Read in the Section on Practice of Medicine of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

muscular system, functional deficiencies, and tardy mental development not infrequently seen in childhood, it seems astonishing that so many so greatly neglect the intelligent employment of these therapeutic agents. But perhaps the physician himself is no more to blame than his *alma mater,* which has been particularly conspicuous for the absence of any thorough course in physical therapeutics in its curriculum. During my college career, apart from the orthopedic courses given, very little direct or scientific instruction was given in physical therapeutics, and I regret that in several of our leading colleges much the same situation, with minor additions, still prevails.

Whence comes the most of our knowledge of physical therapeutics? Not from medical colleges, not from schools of science, in which it should be taught, but from sanatoriums, physical-culture schools, hydrotherapy spas, mechanotherapy and osteopathic colleges, irregulars, etc. Little wonder, then, that there is to-day a rapid growth in the patronage of these various cults and pathies, and in the public sympathy with legislative efforts toward their legal standardization and professional recognition. Neither can we wonder at the attitude of our own patients toward these remedial forces and those who are administering them, for many of us refuse or neglect to employ them.

Contrast the scientific knowledge and provision for this class of therapeutics in continental Europe with that of our own country, and you need no further reason for the annual exodus of thousands who take their multiple ills to some foreign therapeutic shrine for relief. This need not, and should not, be the case; then, how may it be prevented? Not by your efforts, singly exerted; if you would change it, it will be through your alumni, acting collectively, demanding that medical colleges establish suitable courses in which thorough scientific instruction will be given to the future students in medicine.

Fundamentally speaking, in my judgment there are three cardinal conditions that are directly concerned, as both contributive and causative agents in the various diseases that are accompanied by toxemia. They are intemperate food indulgence, indifferent muscular activity and inefficient elimination. Indeed, whether fundamental or incidental, wherever and for whatever reason a toxic state maintains, the therapeutic agents that are most powerful in affecting normal balance, through physiologic means, are, without question, the most ideal remedies.

Referring particularly to the infections under the head of cardiovascular diseases, both hypertension and incidental circulatory tension are present, and both vary necessarily, according to the nature and extent of the pathologic changes present: In both, the patient may be afforded great relief, and the physician's anxiety lessened by the use of eliminating-packs, associated with prescribed rest and diet. To be effective, the treatments should be applied with regularity and with as near a definite knowledge as possible of the pathologic and physiologic processes operating at the time. The hot "drip blanket pack" and the hot sea water tub (covered) may be employed, separately or alternately, with splendid results in most ambulatory cases, due consideration being given to the time, temperature and after-care of the patient.

Knowledge and judgment are as essential in the employment of this, as of any other system of therapeutics. Tension may be either compensatory or noncompensatory, and it is with the former that most care and judgment need to be exercised.

It is for these compensatory disturbances that some physicians are using the high-frequency current by means of the auto-induction coil with apparently good results. While this has not as yet received general approval, whether because of the expense attached to procuring the outfit or the natural slowness with which many physicians resort to mechanical measures as a therapeutic means of relief awaits future judgment. There is good reason, however, for believing that the experienced operator will find in electricity many aids for disturbances incidental to both functional and organic causes, that hitherto have not been closely studied or to which the current has not been most advantageously applied.

In closing this very limited discussion of so vast and important a subject, I would emphasize the fact that in this as in other sciences, "knowledge is power," and that the situation will not and cannot change until the subject of physical therapeutics becomes a part of our medical curricula and is authoritatively and more fully taught, in our medical colleges, and our physicians are more thoroughly trained in the science, as well as in the administration of this division of therapy.

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ABSTRACT OF DISCUSSION

DR. WILLIAM GRAY SCHAUFFLER, Lakewood, N. J.: What has been stated by Dr. Marvel I believe to be entirely true. The great trouble in the use of physical therapeutics lies in two facts. First, most of the medical men do not sufficiently understand either the principles or the means of application. Secondly, they are careless in their work and, therefore, they are apt to be disappointed in their results and physical methods are discredited. There is enough good resulting from the employment of physical therapeutics to justify the use of such methods by all practitioners. Many men say that they have no time to be bothered with these methods of treatment and are opposed to taking the time required to learn their use. The employment of physical therapeutics in many cases pays in more ways than one. First we can give a certain number of patients relief from their symptoms which they can get in no other way. In the second place, we can ease their minds. I do not want to be understood as emphasizing too much the effect of this treatment on their mental condition. But the state of the mind of the patient needs attention, as well as the body, and I do wish to emphasize the fact that the patient's mind can be made easy by the employment of this method of treatment. I urge on the medical men of this Section that they take more pains in informing your college graduates regarding the subject under discussion, the more scientific employment of physical therapeutics. Many mistakes are made by using apparatus that is not fitted for the needs of the individual and especially in giving too long treatments with the high-frequency current, hydrotherapy, and other modalities. I do not believe in placing a patient under treatment for half an hour, when five minutes will answer the purpose. I also believe that we should treat these patients ourselves and not leave them entirely to our assistants.

DR. SOLOMON SOLIS COHEN, Philadelphia: Dr. Marvel is too sweeping when he states that physical—or as I prefer to say, using a broader term, physiologic—therapeutics is not taught in medical colleges. My own first systematic course of lectures, given some twenty-five years ago at the Jefferson Medical College, was on this subject, and although I have switched over into clinical medicine, my colleague, Prof. H. A. Hare, has embodied a like course in his teaching from the chair of therapeutics. Even before the time mentioned Professor Bartholow gave a few lectures annually on these topics, and before Bartholow, my brother J. Solis Cohen, gave courses on electrotherapeutics, hydrotherapy and aërotherapy. Here then, is one college, at least, which has taught physical thera-

peutics systematically for more than a generation, and I do not think it is the only one, though it may have been the pioneer. The fault is not with the colleges, but largely with the medical societies. Let a man report to the ordinary medical society—not excluding this Section of the American Medical Association—the results that follow scientific electrotherapy, hydrotherapy, aerotherapy, pneumotherapy, thermotherapy, psychotherapy, phototherapy—anything except *x*-rays, which are getting to be semirespectable—and at best he is listened to with polite indifference. Commonly he is not listened to at all. It takes the heart out of one to be treated in that way! No wonder that these methods fall into the hands of quacks, charlatans, Ishmaelites—or into those of a few exceptionally brave men who, knowing the power for good that is in their hands, are not deterred from using it by the fear of evil names or professional ostracism. But let me not be unfair; the fault is not entirely with the societies. Some advocates of physiologic therapeutics and of its physical, as well as its psychical methods, are at least a trifle overenthusiastic; they indulge in vague hyperbole; they fail to observe exactly or to report accurately. Thus they arouse a prejudice from which more critical observers and more sedate reporters suffer.

Dr. Schauffler's recommendation that every physician equip himself for employing these methods of treatment personally is impracticable. Not every physician can spare the time. Of course, one may prefer to do certain things oneself, but in the majority of cases we must depend on some one who has devoted himself to the perfection of the necessary technic. This cannot be acquired without long experience—which means specialization. We must therefore either specialize or consult one who has done so after a sufficiently long training in general practice.

DR. A. BERN HIRSH, Philadelphia: It is a curious fact that American physicians have until now viewed the subject of non-drug treatment of disease askance. They looked on the reports of improvement without drugs as something irregular. On the other hand, we are all aware of the fact that many patients go abroad year after year, visiting foreign spas, consulting with specialists, and we know that they receive help from the use of the various non-drug treatment methods. Something must be radically wrong here at home. Some of the medical schools have been teaching this branch of therapeutics in a haphazard way but I am convinced that it is not the attitude of the entire profession to carry on physical therapeutics with the thoroughness, or the directness, or the persistence they should.

It is impossible to entrust physical therapeutics to any nurse, or even practitioner, who has only a theoretic knowledge of the principles of electricity as it should be applied to any disease. And what is as important as a thorough knowledge of electricity is a willingness to apply modern technic and diagnostic methods; the practitioner should also have the training to apply every technical method possible in differential diagnosis before he resorts to non-drug treatment methods.

DR. HOBART A. HARE, Philadelphia: The employment of remedial agents other than drugs is very important from a number of standpoints. In the first place, they possess, in many instances, great power for cure and they are of value from the standpoint of psychotherapeutics, the influence of mind over disease. They enable us to impress on the patient the fact that we have a knowledge of many methods of treating disease. Again, these various treatments interest the patient. This meets competition by quacks, or those who are not considered quacks but irregular practitioners, who know little medicine but understand human nature. When you order for your patient medicine in a glass of water and tell him to take a teaspoonful every few minutes, the patient is then made to do something for himself. A regular practitioner too often orders for his patient a certain drug and tells him to take it three times a day, which is all that is required by science, but something has been left out which would be for his betterment, namely, keeping him busy Another point is that unless the physician is very careless in the employment of these measures he rarely can do great harm with them, whereas we know that any drug capable of doing good, if it is abused, can do harm. A third point is that these measures bring to the physician's mind the importance of studying more carefully the physiology of the patient. When I say "physiology" I use the expression in a broad sense and include a study not only of what is normal but what is abnormal in the way of body functions. The use of the cold bath and its various modifications, or the hot pack with its modifications, the use of exercise, and the action of these agents on the vascular and nervous systems is something that is at times little less than miraculous. A complete readjustment occurs by means of remedial agents other than drugs.

I am heartily in favor of such papers, or even in the formation of a Section which will serve to benefit us by increasing our knowledge and which will enable us to educate the whole profession in the need of recognizing the importance of these remedial measures other than drugs. The time is past when we tell our patients only to take so many drops of this and so many drops of that. We now make a very careful and critical study of every case, and prescribe not only drugs if needed but other remedial agents.

While I believe in increasing the popularity of the use of remedial agents other than drugs, we should at the same time guard the laity against certain dangers. There are a large number of remedial agents other than drugs which are put before the public not for their best interests, but purely for commercial purposes. The laity is inclined to try many of them and to resort to them in a way not profitable except to the irregular practitioner who advocates their use.

DR. JOHN MUMFORD SWAN, Rochester, N. Y.: For the last two years I have been engaged in the direction of the administration of various forms of physiologic therapeutics, and I have been much astonished at the amount of benefit that it is possible to produce without the use of drugs in patients suffering from chronic diseases. In all probability the principal reason why these methods are not more frequently used is that the majority of the members of the profession are unfamiliar with them and with the results to be obtained by them. In many places there is no opportunity for physiologic methods to be employed because no properly equipped institution is at hand. We must, however, bear in mind that until comparatively recently the majority of men engaged in prescribing these forms of treatment have been, to say the least, not highly ethical in their methods. Too much good has been claimed for the methods and the publications of case reports have been vague and unscientific. This phase of the matter can easily be remedied by the publication of careful scientific studies of series of cases which include failures as well as successes. It is also necessary for an institution equipped for the administration of the various forms of hydrotherapy, thermotherapy, phototherapy, mechanotherapy, etc., to divorce absolutely the business and the medical departments.

DR. PHILIP MARVEL, Atlantic City, N. J.: I purposely avoided comparing colleges and detailing their courses in physical therapeutics believing this was a matter more for the discussion than for the paper and wishing to be fair to all. I am willing now to leave the question as it has been discussed by Drs. Schauffler, Cohen, Hirsh and Hare.

Treatment of Bites of Dogs.—The dog should not be killed, but chained up and kept under close observation for a period of sixteen days at the least. If he is infected with rabies he will show symptoms in that time and in all probability will die within ten days. It is a fatal disease in animals. Pasteur treatment, to be effective, must be instituted within five days after the infliction of the bite, or its usefulness is very much impaired. In doubtful cases, or where the animal has disappeared, it is better to give the treatment than to take chances, because the virus is harmless if given under aseptic precautions, and if the animal happens to have been rabid we have probably saved the patient from a dreadful death.—Tarbell in *Jour. Med. Soc. New Jersey.*

PHYSIOLOGIC BASIS OF THORACIC SURGERY *

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NEW HAVEN, CONN.

In the development of abdominal surgery, physiologic methods of investigation followed and explained, in many cases, conditions which had been learned empirically at the operating-table. With this experience before us, we should, if possible, utilize these methods to throw any possible light on the harmlessness or seriousness of the details of operative procedures in order to facilitate our work on human beings. Accordingly, a series of typical thoracic operations was planned on animals connected with a kymograph, simultaneously recording the respiration and blood-pressure, in order to determine what reactions the medullary centers would yield to various operative procedures. It is, of course, understood that these are not reactions to accurate stimuli, but, in a physiologic sense, to the gross and crude trauma of an ordinary operation.

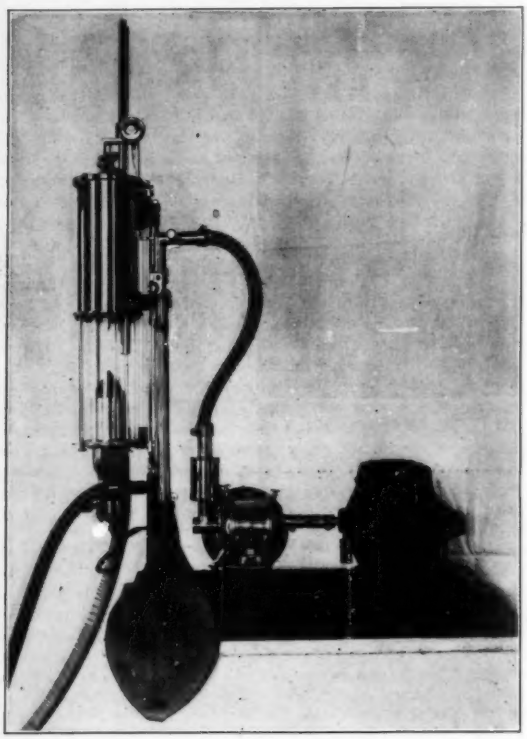

Fig. 1.—The apparatus viewed from the side, showing the arrangement of the motor, blower and rheostat, and their relation to the etherizing and warming chambers.

The apparatus used for anesthesia in these experiments was an improved form of the instrument I described two years ago,[1] the first appliance that could be used for insufflation, pharyngeal anesthesia, or positive pressure-differential at will by simply varying its terminal connections. The apparatus consists of two parts, a motor and pressure blower, and the etherizing chamber with a water-valve. A small ⅛ horse-power compound wound motor furnishes the power to drive the blower, which is specially built for the apparatus and which is connected to the motor by means of a universal joint. The speed of the motor is controlled by a small rheostat. The blower is small and compact and furnishes an ample volume of air for both insufflation and pressure-differential when driven at relatively low speeds. Attached to the blower is a small accessible filter allowing the filtration of the air through a layer of cotton 4 cm. in thickness. The motor, blower and stand fit in a case measuring 10 by 10 by 20 inches. In case of failure of the electric current a simple connection to an oxygen tank is provided allowing the operation to proceed without interruption. Such a contingency is, however, extremely unlikely to arise.

The air passes from the blower to the etherizing chamber through rubber tubing bound with aluminum wire to prevent kinking. The anesthetizing chamber is divided into two parts, the ether reservoir and the evaporating chamber below where the anesthetic is volatilized and mixed with air and warmed. The reservoir is of 900 c.c. capacity and is provided with a funnel to permit refilling. On the top, a thumb-screw controls the supply of ether to the evaporating chamber below, which can be varied from any number of drops a minute to a steady stream. A small tube passes from the volatilizing chamber opening near the top of the reservoir to equalize the pressure above the surface of the ether with that in the chamber below. This can be closed by a screw valve should it become necessary to refill the reservoir during the progress of an anesthesia. The compressed air is conducted to the volatilizing chamber by a tube which delivers it at one side of the warming cone, on the apex of which ether is dropped from the valve above. This cone contains a 36-candle-power carbon filament lamp which is used as a source of heat. The latter is quite sufficient, not only to volatilize the ether instantly, but to warm the mixture of ether and air which passes from the outlet tube to the mask. That this may be a matter of considerable importance will be shown in a later communication. The intake and outlet tubes from the volatilizing chambers are further controlled by a piston valve which yields a secondary and instantaneous control of the air circulation within the evaporating chamber by simply turning a small screw-head which is provided with an indicator. The ether chamber can be cut entirely out of the circuit by placing the indicator at *A*, when either pure air or oxygen is sent to the mask or intratracheal catheter; with the indicator at *M*, one-half of the air is sent through the etherizing chamber, and the remainder short-circuited to the catheter or mask, while with the indicator at *E*, the entire air-current is directed through the volatilizing chamber. Obviously any desired proportions of air and ether in mixture can be obtained by fractional movements of the valve. During the use of this valve, the air-current is not interrupted by its movements, but flows continuously either through the volatilizing chamber or directly to the mask. As a matter of fact, the anesthesias are all regulated with the dropping valve as this secondary control is used only in case of emergency.

From the volatilizing and warming chamber, the mixture is carried to the intratracheal catheter or mask

* From the Surgical Laboratory of Yale University.

* Read in the Section on Surgery of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

1. Flint: Yale Med. Jour., February, 1910.

by an aluminum wire-bound tube. For insufflation, the pressure is read from a manometer at the side of the outlet tube. Temporary reduction of the pressure to allow occasional collapse of the lungs in preventing the accumulation of carbon dioxid is accomplished by turning a blow-off valve between the blower and the evaporating chamber. For pressure-differential, we have used either the Brat or a special modification of the Mayer-Denis mask. In this method, it is well to have an equalizing bag inserted in the circuit, which we usually place either at the mask or on the outlet tube of the vaporizing chamber to care for sudden changes in the respiratory

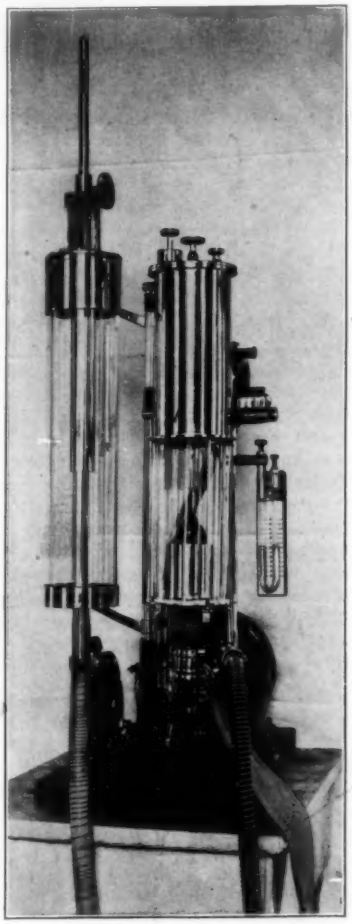

Fig. 2.—The apparatus viewed from the front, showing the ether reservoir, warming and vaporizing chamber and water-valve. The tubes lead to the mask for overpressure anesthesia.

rate. This avoids the necessity of running the blower at a speed commensurate with the maximum rate of respiration and, consequently, saves a considerable amount of ether. From the mask another tube passes to the water valve, the outlet of which is controlled by a tube which can be raised and lowered beneath the surface of the water, so that the pressure in the system can be regulated at will from 0 to 20 cm. by means of a rack and pinion on which the pressure is automatically read. For insufflation, the motor is run at the second speed while the first speed provides an abundance of air for the mask method. The entire apparatus is demountable and can be carried in two small boxes. It needs no care, save for the occasional oiling of the pressure blower and the motor. The apparatus complete costs about $160.

EFFECT OF POSITIVE PRESSURE AND INTRATRACHEAL INSUFFLATION WITH CLOSED AND OPEN THORAX

My observations coincide, so far as the positive-pressure method is concerned, almost entirely with those of Seidel. With a closed thorax and the production and subsequent reduction of pressure-differences from 0 to 8 cm. of water, the blood-pressure and heart-rate are scarcely affected, the influence of the changing pressures manifesting itself chiefly in a slowing of the respiration. With a closed thorax and ether anesthesia, an increase

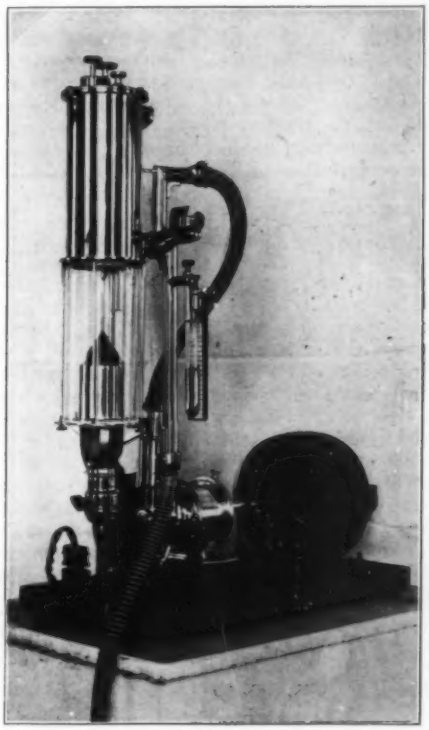

Fig. 3.—The apparatus arranged for intratracheal insufflation. The pressures are read from the manometer. The water-valve is removed. In this form the apparatus may also be used for pharyngeal anesthesia.

in pressure results in a slight slowing of the rate due to a prolongation of the expiratory phase. Subsequent reduction of the pressure restores the rate and type of respiration to normal. Seidel reports this effect without anesthesia, but asserts that it is neutralized by the anesthetic, a finding which I have not been able to confirm. When the pressure is raised to a degree sufficient to prevent lung collapse, just before the incision of the pleura, an open pneumothorax is without effect on the heart-rate, blood-pressure or respiration. When the pleura is opened without a pressure-difference, there is a period of three or four respiratory cycles during which the visceral and parietal pleuræ seem to cohere. With the subsequent collapse of the lungs from atmospheric pressure, the respirations become increasingly rapid and

dyspnœic in type. The heart-rate is slowed; the pulse takes on a vagus character, and there is a slight asphyxial rise in blood-pressure. These symptoms promptly disappear when the pressure is raised to a point sufficient to reinflate the lungs. Without reinflation, death from asphyxiation occurs in the average dog in from two to five minutes. During the period of an open pneumothorax, these phenomena may be elicited at will or obliterated after their appearance by allowing lung collapse or reinflation of the collapsed lungs through a decrease or increase in the pressure-difference as occasion demands.

In intratracheal insufflation, with a perfectly adjusted catheter, there is little or no change in the blood-pressure curve. The heart-rate remains unaffected and only transitory changes are observed in the pressure. The respiratory rhythm is usually altered, but soon becomes regular for the given current of air flowing. The effect on the respiratory curve depends on the volume of air delivered through the tube. Under conditions of an increasing current, the rate may vary from normal to complete apnœa. Unless the relationship between the catheter and the trachea is optimum, there may be a considerable change in the character of the blood-pressure curve following the inauguration of the insufflation which manifests itself in a fall of blood-pressure and a definite vagus character to the pulse. This is slower than normal with a much greater amplitude to the pulse-curve. Even under such circumstances, a satisfactory anesthesia may be obtained. When the air-current has been increased to a degree sufficient to produce pressure apnœa, there is a fall in blood-pressure. The pressure soon rises, however. Likewise, a subsequent reduction of the air-current, reinducing respiratory movements, results in a transitory rise in pressure followed by a fall to normal. These phenomena result from the inflation and deflation of the lungs, and their effect on the pulmonary circulation under the changing pressure within the tracheal catheter. In consequence, the ordinary effect of inspiration and expiration on the respiratory curve is inverted as the pressure rises during deflation and falls during inflation, the obverse of the ordinary respiratory wave. During these changes, there is no variation in the heart-rate. I have never been able to produce apnœa after the removal of one lung. With the insufflation method, the opening of the pleura exerts no influence on the blood-pressure, nor is there any change in the character of the pulse-curve. The respiratory curve may be altered somewhat by the partial collapse of the lungs.

APPLICATION OF THE RIB-SPREADER

Careful application of the rib-spreader in both methods of anesthesia yields similar results, which consist ordinarily in a transitory change in the character of the respiration, probably due to a readjustment of the respiratory musculature or to a change in the pressure on the recording tambour. The heart-rate and blood-pressure remain unaffected. In certain experiments, the adjustment of the spreader is followed by a marked increase in the respiratory rate and accompanied by a fall in blood-pressure. I have explained this depressor effect as possibly due to the tearing of the parietal pleura at the angles of the wound, when the incision is not long enough to permit the spreader to give the desired exposure, although the reaction is not typical of a reflex owing to an absence of the slowing of the pulse. This occasional reaction appears somewhat like the so-called "pleural reflex" although I have never been able to produce the latter under anesthesia by scraping or traumatizing the parietal layer. The same thing is true of the "periosteal reflex," to which attention has been called. Under anesthesia, crushing, fracturing the ribs or otherwise mechanically stimulating the periosteum is entirely without effect on the character of the respiratory or blood-pressure curves.

MANIPULATION OF AND TRACTION ON THE LUNGS

Manipulation of or traction on the lungs is followed by a fall in blood-pressure and slowing of the pulse and respiration, the extent of which varies with the degree of traction and manipulation. An analysis of the causes of this depressor reaction seems to show that it is due, as will be shown later, to tension transmitted through the bronchi or great vessels directly to the heart.

LIGATION OF THE LOBES

The effect of passing the ligatures around the root of the lobes with subsequent ligation varies in several experiments from a fall of blood-pressure and slowing of the heart-rate to instances where no effect is observed at all. A study of the factors involved here makes it appear as though the result is due to transmitted traction at the root of the lung. A ligature which is very carefully applied and drawn tight without tension on the root gives no reaction on pulse, respiration or blood-pressure. In view of the stormy symptoms that supervene in pulmonary embolism, the fact that one half of the lesser circulation may be eliminated in a complete pneumectomy with no effect whatever on the systemic blood-pressure, heart-rate or respiration is astonishing and shows that the symptoms following pulmonary embolism are probably due to the ensuing thrombosis. The tightening of the ligatures when applied around the entire root of the lobe apparently does not stimulate the vagus filaments which run along the bronchi, nor is there any indication that the ligature, if carefully applied, elicits the so-called pleural reflex described by Brodie and Capps. In insufflation, the same absence of symptoms following this procedure is observed as in the positive-pressure method.

REMOVAL OF THE LOBES

The effect of the removal of the lobe is the same as that elicited by traction on the stumps and the reaction is due to the same cause. When the excision can be accomplished without pulling on the lung, no effect whatever is observed on the tracings.

TRACTION ON THE STUMPS

Whenever a traction is exerted on the ligatures attached to the lobe stumps, there is a fall in the blood-pressure, accompanied by a temporary inhibition of the respiration and a slight slowing of the heart-rate. The fall may equal 20 mm. of mercury, although the degree varies directly with the amount of traction. Traction on the upper lobe stump, or on the lower lobe stump, or on both, simultaneously, produces exactly the same effect. On the release of tension, the recovery of the blood-pressure is prompt and characteristic. The fact that the ligature can be tied around the stumps without irritating the terminal vagus filaments would seem to indicate that this phenomenon is not produced by vagus irritation, but possibly follows an alteration in the efficiency of the heart action by a transmission of the traction through the great vessels directly to the heart itself or else is a reaction similar to that elicited by traction on the carotid. The reaction during intratracheal insufflation is precisely similar.

CRUSHING OF THE PHRENIC NERVE

In order to embarrass the respiration still further, the phrenic nerve was crushed by the application of artery forceps. The amplitude of the respiratory wave was reduced about one-half, although the character and rate remained unchanged. The slight pressor effect resulting in an increase of blood-pressure, averaging about 16 mm. was obtained in most experiments. This phenomenon was observed in both plus pressure-differential and insufflation methods of anesthesia.

INCISION OF PERICARDIUM

The manipulation necessary for the incision of the pericardium manifests itself with perfectly typical cardiac inhibition which lasts as long as the irritation of the pericardium continues. In all probability, this effect is due to direct mechanical cardiac stimulation through the pericardium, inasmuch as it differs in no way from the effect produced by touching or manipulating the heart itself. Supporting this view is the absence of any reaction when the edges of the incised pericardium are picked up with forceps, provided the heart itself is not touched.

Hurtel has recommended recently the preliminary cocainization of the pericardium in order to prevent the effects of local stimulation of the pericardium on the blood-pressure and respiration. In my experiments, the respiration remained unaffected. The phenomena observed were confined entirely to the blood-pressure and heart-rate. The experiments carried out by the insufflation method yielded precisely similar results to those obtained by a plus pressure-differential.

TEMPORARY CARDIAC HEMOSTASIS

Sauerbruch has recommended the method of clamping the great vessels of the root of the heart between the fingers for temporary hemostasis during heart suture. The physiologic effects of this procedure is shown by a sharp fall in the blood-pressure from 90 to 12 mm. from which there is a prompt recovery on release of the constriction, but the experiment is followed for a short time by a vagus type of pulse. This characteristic of the pulse-wave is only transitory, however, although the recovery of the blood-pressure to its former height is not so prompt.

THE EFFECT OF TRACTION SUTURES IN THE CARDIAC MUSCLE FOR TEMPORARY HEMOSTASIS

The application of traction sutures for the purpose of hemostasis during suture of the heart muscle is exactly the same as that observed in direct mechanical stimulation of the heart, which is followed by a temporary cardiac inhibition and fall in blood-pressure, from both of which, there is, however, a prompt recovery.

STABBING OF THE HEART AND HEART SUTURE

The stab wound of the heart shows precisely the same physiologic effect as direct mechanical stimulation of the myocardium, except that the reaction is somewhat more violent and the vagus type of the pulse persists. This is, in all probability, exaggerated by the tension of the two traction sutures during temporary hemostasis, while the application of the stitches to the heart muscle itself is in progress. During these manipulations there are frequent periods of cardiac inhibition and the vagus type of pulse increases; respiration becomes slower and somewhat shallower. The vagus character of the pulse persists for a considerable period, when the improvement in both the respiratory rate and blood-pressure is observed and both return to an approximately normal state. It may be well to add that the wounds were large, made sometimes near the auriculoventricular septum and at others near the apex, and required from six to eight sutures to close them. They represent a severer traumatism than could often be survived in actual clinical experience. The reaction following stabbing of the heart may result in a marked fall of the blood-pressure, which depends partly on the degree of traumatism and partly on the amount of blood lost before the hemostasis is obtained. In general, the type of reaction obtained in these experiments must vary somewhat with the conditions, and depend partially on the degree of traumatism inflicted during the completion of the heart suture.

These factors may delay, too, the time when the cardiac masculature shows a symptomatic recovery from the injury which it has received. Inasmuch as the number and nature of the stimuli applied to the heart during the suture of the wound vary more or less in each experiment, so the reaction, in one instance, may be much more marked than in another. In general, however, the conditions observed in the above experiment may be taken as typical, although it should be noted that in each instance, the wound of the heart and the subsequent suture were performed after the complete pneumectomy and crushing of one phrenic. Under these circumstances, the response is probably somewhat more profound and the recovery somewhat less rapid than would be the case where the experiments are carried on without the preliminary pneumectomy.

PACKING OFF LUNGS WITH GAUZE

In order to secure a good exposure of the heart and esophagus, it is often necessary to pack off the lungs with gauze or Mikulicz pads. This procedure is followed by a temporary drop in the blood-pressure from which there is usually prompt recovery, although it takes some time before the adjustment is complete and the blood-pressure reaches its previous height. During this period, there is also a slowing of the respiration, but the rate returns to normal with the restoration of the pressure.

DISSECTION OF THE VAGI

In one experiment, both vagi were dissected from the esophagus, preliminary to partial esophagectomy. In this instance, no effect was observed on the blood-pressure, heart-rate or respiration. The dissection was carried out in the lower segment in the esophagus below the point where the pulmonary and cardiac plexuses were given off. Similarly, separation of the diaphragm from the stomach and esophagus, when carefully carried out, is without effect on respiration, heart-rate or blood-pressure.

ACUTE PNEUMATIC DILATION OF THE STOMACH

One of the untoward effects of the pressure-differential methods observed on a few animal cases and in one or two instances on human beings, either by the plus-pressure method or the Sauerbruch cabinet, has been a sudden dilatation of the stomach, due to the relaxation of the pharyngeal musculature and a discrepancy in the pressure between the stomach and pharynx. The accident has not infrequently occurred with the inauguration of insufflation when the catheter has been passed by mistake into the esophagus instead of the trachea. In order to determine the effect of this condition on animals, the stomach was inflated by plunging a trochar through the abdominal wall and distending the stomach with air. In one instance there was a sharp rise in the blood-pressure,

accompanied by respirations that were shallow and irregular in both force and rhythm. As soon as the animal had adjusted itself to the new condition, the respirations were slowed and were followed by a period of rapid inspiration and prolonged expiration, probably due to the pressure of the stomach on the diaphragm. The blood-pressure remained high throughout the experiment. In another instance with the insufflation method, the reaction was by no means so marked so far as the blood-pressure was concerned, but there was a definite temporary embarrassment of the respiration from which the animal relieved itself by belching.

The reactions of the medullary centers to operative traumatism as shown in these experiments suggest that we should be cautious in the treatment of the parietal pleura, particularly in tearing it at the angles of the intercostal wound by injudicious application of the rib-spreader. The lungs may be handled freely, but manipulations that tend to transmit traction to the great vessels and bronchi at the root of the lung should be reduced to a minimum. In heart suture, the Sauerbruch method of temporary hemostasis leads to too serious a fall in blood-pressure to be safe except where other means of hemostasis fail. Any mechanical stimulation of the heart, either directly or through the pericardium, during suture should be avoided so far as possible. Furthermore, in packing off the lungs to obtain an exposure of other thoracic viscera, it would be wise to avoid any unnecessary trauma which might tend to reduce the blood-pressure excessively. These are the stimuli which, in the present set of experiments, have produced the most serious reactions

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ACUTE POLIOMYELITIS, TRANSVERSE MYELITIS TYPE *

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We have given names to diseases according to the clinical phenomena exhibited, according to etiologic factors and according to anatomic localization or changes. The title of this paper might be altered, have additional descriptive terms appended, or even shortened.

The object of preparing this paper is to place on record a case studied clinically and anatomically, a case of which I can find no counterpart after having searched diligently through the European and American literature.

This report covers one of the most interesting of the many cases which I, in the capacity of special investigator for the Kansas State Board of Health during the past three seasons, have had the opportunity of studying. The patient was taken by the family physician, Dr. Beach, of Clyde, Kan., on the sixth day of the illness to the University of Kansas Hospital at Rosedale where she was under my observation continuously until death, a period of three months.

History.—Patient, F. G., schoolgirl, white, aged 13. Father and mother are in good health. One sister, aged 15, well. No brothers or sisters dead. Patient's birth, infancy and early childhood normal. Measles at 5. No serious illness at any time. Somewhat emotional and considered an affectionate child.

Patient was in excellent health prior to date of onset. On Nov. 2, 1909, she complained of pain in left lumbar and pleural region. On the following day the pain was general in the back, especially along the spine, and in the abdomen. Both legs ached. Headache was present. These symptoms continued during the first four days. The attending physician recorded a temperature of 100 F. on first day of illness and 103.2 F. on the third day. The pulse ranged from 96 to 120. Respiratory rate was 24. There was no vomiting. Constipation preceded and continued during the illness. Retention of urine commenced on the third day of illness and required several catheterizations daily. Motor and sensory paralysis was first noticed on third day after onset when the patient was awakened by a sensation of numbness in both feet which crept rapidly upward to lower chest. The right and left side were equally involved. A mild delirium was observed on the third, fourth and fifth days.

Findings.—My first examination was made on the sixth day of the patient's illness, at the time of admittance to the hospital. Patient was well developed; pubescent. Respiratory organs were normal; circulatory organs normal except increased rate of heart action. Some abdominal tympany was present. There was mild rigidity of recti abdominalis. Urinary bladder was filled. Liver and spleen were apparently not enlarged. Tongue was coated. Skin had several blebs on lower extremities and over pubis, accidents from local application of heat. The mental state showed a little depression, but accurate, coherent replies were made to all questions. Close examinations of all cranial nerves showed normal functions. Motor power in the neck group and upper extremities was normal.

There was an absolute flaccid paralysis of all muscles in the lower extremities, not a trace of movement being detected at hip, knee, ankle or toe joints. The abdominal muscles showed much weakness. There was complete retention of urine and feces. All reflexes of head and upper extremities were normal. No epigastric, abdominal, gluteal, patellar or ankle reflexes could be elicited. Plantar stimulation produced no response. There was a complete sensory paralysis of the area supplied by the eighth dorsal cord segment and below, there being absolutely no response to touch, cotton, pin-pricks, thermal, deep pressure or vibration stimuli in the lower extremities. There was no true hyperalgesia or hyperesthesia from the seventh dorsal area upward, but movements of the thorax involving all the upper dorsal vertebræ caused intense pain and patient preferred to be turned to right side. Sense of position was entirely absent at toe-, ankle- and knee-joints, but feebly present at hips, the right equal to the left.

Course.—The subsequent course of the case was one so frequently observed in severe paraplegic myelitis cases from any of the various causes, in which the patient clings to life for weeks or months and finally succumbs to exhaustion with slowly increasing bed-sores, cystitis and other complications. Emaciation and exhaustion reached an extreme degree and death occurred Feb. 22, 1910, almost four months after the onset of the paralysis.

Full mental faculties were retained until forty-eight hours before the exitus when they became dulled with a rapidly oncoming coma. The palsied state never showed any substantial improvement. The muscles of the lower extremities remained functionless, flaccid and became markedly atrophic. A feeble right and left toe-extension sign could be demonstrated in the third week but not two weeks later. No change appeared in the findings as to deep reflexes. A partial sense of position in toes, ankles and hips but not at knees could be demonstrated in the second week but never after the fourth week. The superficial sensations remained unchanged. Trophic disturbances in the lower extremities developed early, and finally numerous large bed-sores appeared, the sacral eroding into the neural canal. Edema of the lower extremities was present during the last month. There was continuous pyrexia, and temperature ranging between 100 and 104 F. During the last few weeks of the illness there was recorded an irregular

* Read in the Section on Pathology and Physiology of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

subnormal temperature. It dropped to normal after each of the two venesections and returned on the following day. A consultant diagnosed a cholecystitis in the fourth week, but an exploratory operation revealed no pathologic changes in the gall-bladder, tracts or neighboring viscera. Although no anesthetic was administered, the patient was entirely unconscious of the operative manipulations excepting some visceral pain when traction was made on the liver.

Laboratory Analyses.—Rachicentesis at the third lumbar space was performed on the sixth day of the illness with no pain or consciousness of the operation. Only about 1 c.c. of cerebrospinal fluid could be obtained on account of the difficulty in obtaining a flow. It coagulated more rapidly than normal blood, the drops finally hanging at the external opening of the needle in the form of congealed globules. The fluid was perfectly clear. A microscopic examination showed a mild pleocytosis, about 90 per cent. lymphocytes. Much coagulation fibrin was present. No microorganisms were found. Rachicentesis at the second, third, fourth and fifth lumbar spaces on the ninth day gave no fluid each puncture. I felt sure that the needle entered the lumbosacral cistern each time.

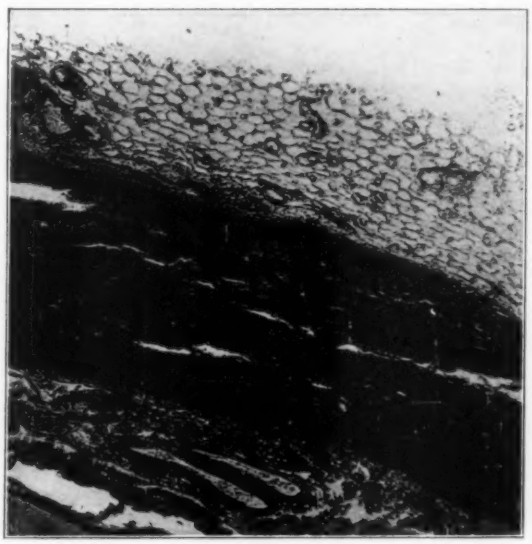

Fig. 1.—Section of cord and meninges at the ninth dorsal segment, showing epidural fat, adherent and thickened dura, arachnoid and pia.

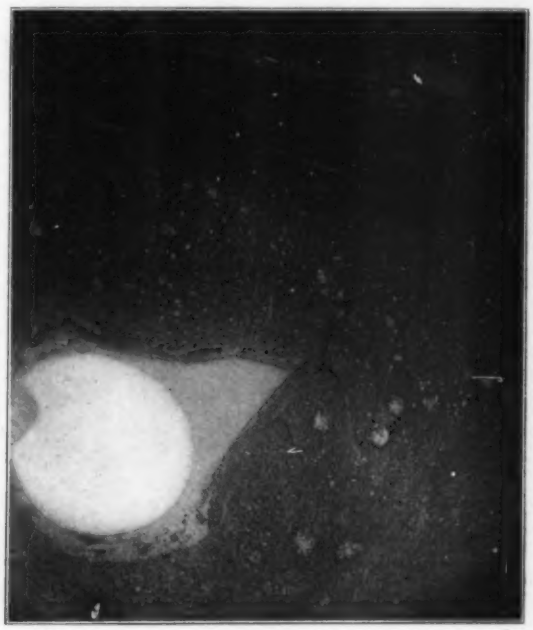

Fig. 2.—Section at ninth dorsal segment, showing a large cavity in region of posterior column, canalis centralis and thickened meninges.

A venesection was performed on the seventh day of the illness and 60 c.c. of blood withdrawn. One guinea-pig, one rabbit and one rhesus monkey were inoculated with a few cubic centimeters of the blood by the intraperitoneal route. All yielded negative results. Seventy-five c.c. of blood were removed on the eleventh day of the illness. Bouillon cultures with blood gave negative results in each instance.

A blood-count on the seventh day gave a leukocytosis of 32,100 with 88.5 per cent. polymorphonuclears and 5.5 per cent. lymphocytes. Ten days later the leukocyte count was normal. A Widal test on the tenth day gave a negative result.

Urinalysis on the sixth day gave acid reaction, specific gravity 1,017, no albumin, sugar or indican, few hyaline and granular casts, red corpuscles, some leukocytes and long motile bacilli. Later analyses showed continued cystitis.

Autopsy.—The post-mortem was performed two hours after death. There was no rigidity. Great emaciation and enormous sacral and trochanteric bed-sores were present; also lesser sores over bony prominances of feet, knees and scapulæ. There was some edema in the lower extremities and lumbar muscles; no serious changes in organs of chest or abdomen except evidence of wasting. The gall-bladder operative wound had healed nicely. On opening the skull the dura appeared normal. There was a little excess of fluid in the subdural and arachnoidean spaces. Some retraction of brain was seen. The convolutions appeared normal. All the ventricles were normal. The spinal cord dura appeared normal above the seventh dorsal segment. The dura, arachnoid, pia and cord were closely adherent, obliterating all spaces from the seventh dorsal segment to the first lumbar. (Fig. 1.) No fluid was present. The meninges were three or four times thicker than in the normal. The cord, to the naked eye, showed nothing abnormal above the seventh dorsal segment. It was diminished in size from constriction at the seventh and eighth dorsal segments. The lower five dorsal and lumbar segments had several cylindrical microscopic cavities extending up and down in the white and gray tissue. Especially do they appear in the posterior columns. (Fig. 2.) In the last two sacral and coccygeal segments appeared a softening which gave a *Staphylococcus aureus* culture. No bacteria were found in the cord above this area.

The cord was hardened and fixed in alcohol and sections from each segment stained by the Nissl, picrofuchsin and hematoxylon methods for microscopic studies. The meninges of the lower dorsal segments presented the same sclerosed or hypertrophic appearance under the microscope as seen macroscopically. There was no infiltration of the pia and arachnoid. Above the seventh dorsal segment no marked minute changes were observed outside of ascending secondary tract degenerations. Some of the anterior horn cells in the cervical enlargement showed mild degenerative changes. From the eighth dorsal segment to the third sacral were seen all kinds of degenerative changes in the anterior horn cells. In a few of the segments all cells were present, but only a few were normal. Studying cells from various segments revealed axonal degeneration, tigrolysis in various stages, loss of nucleus, various forms of nuclear displacement and vacuole formations. (Figs. 3 and 4.) Often a fragment or a mere trace of a motor cell could be seen. There were some degenerations of the smaller cells of the posterior horn. Clark's column group of cells was much degenerated. The anterior, posterior and lateral white columns presented diffuse degen-

erations in all the tracts from the seventh dorsal segment downward. Diffusely scattered through the columns were observed microscopic cavities. Surrounding these cavities as well as the macroscopic ones, there was no indication of inflammatory reaction to be seen. As in the gray substance there were seen no leukocytic infiltrations or connective-tissue overgrowth. All the blood-vessels present in both the gray and white substance appeared to have normal walls and had no infiltrations.

Diagnostic Remarks.—During the early period of the illness, with considerable caution, a diagnosis of acute epidemic poliomyelitis with a transverse myelitis was made. The subsequent course of the case and the autopsy only added support to this diagnosis. The findings from the two lumbar punctures indicated the adhesions of the meninges in the dorsal cord. The coagulation of the cerebrospinal fluid has been observed in a few exceptional cases of undoubted acute poliomyelitis. Otherwise the cytology of the spinal fluid was

Fig. 3.—Three anterior horn cells from lumbar cord with complete tigrolysis. The upper and lower cells contain vacuoles.

quite characteristic. It was certainly not characteristic of any purulent infection. The laboratory work with the blood indicated no bacteriemia. The continued fever was probably a result of trophic disturbance and a cystitis. Urinary retention or incontinence is very infrequent in acute poliomyelitis, but would be expected in any case of complete transverse myelitis from any of the numerous causes. There are some undoubted cases of acute poliomyelitis reported with paralysis of the sphincters. Likewise severe sensory disturbances are rare in acute poliomyelitis. Hyperesthesias and paresthesias are not infrequent. I have reported[1] one case of spinal poliomyelitis in which there was diminished sensation in the paralyzed member and a return of normal sensation within a few weeks. In support of the often observed fact that patients rarely die of their original disease, this case is an illustration in which the patient probably succumbed to several sequelæ which also were the cause of the most striking clinical phenomena. The mode of development of the thickened meninges cannot be stated. There are a number of causes given for hypertrophic meninges, but some remain unexplained. I am inclined to believe that the overgrowth followed a severe edema and inflammatory process of the lower dorsal meninges. The thickened meninges were probably responsible for much of the myelomalacia.

It is very evident that we have a transverse myelitis to deal with, but transverse myelitis type of acute epidemic poliomyelitis (with apologies to our rather inaccurate nomenclature) is exceptional, and particularly so severe and definite a case. Reviewing the history of acute poliomyelitis from the time of our earliest definite knowledge of the pathology by Cornil and Charcot, in 1864, and Vulpian and Prevost, in 1866,[2] we have had added from time to time different types of acute poliomyelitis until we now have quite a number. Most of these types are named by their localization as encephalic, bulbar, spinal, polyneuritic, meningitic, ascending, etc.

I have reviewed extensively the literature of acute poliomyelitis and transverse myelitis for cases that might be akin to the one which I am reporting. Harbitz and Scheel[3,4] report a case of transverse myelitis with autopsy, but indicate some uncertainty about diagnosing acute epidemic poliomyelitis of the transverse myelitis type. Strauss[5] reports an illustration of edema and marked softening of the central nervous tissue

Fig. 4.—Four anterior horn cells from lumbar cord, showing marked chromatolysis, axonal degeneration and nuclear displacement.

in a fatal case of acute poliomyelitis. The cases of transverse myelitis with flaccid paralysis are infrequent. Cases in which a transverse myelitis has appeared with a more or less sudden onset, with a flaccid paralysis, and in which acute poliomyelitis has been considered in a differential diagnosis, or in which the etiologic factors have been uncertain or hazy or in which no conclusions were made regarding the true cause are reported by Nageotte,[6] Evans,[7] Pilger,[8] Thompson,[9] Spear,[10]

1. Skoog: Three Cases of Acute Poliomyelitis in Same Family at Same Time, Med. Herald, St. Joseph, October, 1911.

2. Medin: Nord. med. Ark., 1896, No. 1.

3. Harbitz and Scheel: Pathologisch-anatomische Untersuchungen über akute Poliomyelitis und verwandte Krankheiten, Christiania, 1907, p. 162.

4. Harbitz and Scheel: THE JOURNAL A. M. A., Oct. 26, 1907, p. 1420.

5. Strauss: Epidemic Poliomyelitis, Rep. of Col. Inv. Com. on N. Y. Epid. of 1907, N. Y., 1910, p. 78.

6. Nageotte: Deux cas de myélite transverse aigue, Nouv. iconog. de la Saltpétrière, 1895, viii, 325.

7. Evans: Case of Acute Transverse Myelitis; Post Mortem Examination, Lancet, London, 1894, ii, 683.

8. Pilger: Ueber einen Fall von genuiner Myelitis transversalis, Inaug. Thesis, Berlin, July 26, 1898.

9. Thompson: Transverse Myelitis, Railway Surg., 1901-1902, viii, 130.

10. Spear: Report of a Case of Transverse Myelitis in Woman Five Months Pregnant Followed by Very Easy Labor, Hosp. Bull. Univ. Maryland, 1908, iv, 365.

Frohmann,[11] Nogues and Sirol,[12] Ferrori[13] and Burr.[14] Brissaud[15] has reported a case of transverse myelitis with syphilis as a cause in which the paraplegia was spastic at first and became flaccid in three or four months. Primangeli[16] reports a clinical case of acute transverse myelitis appearing on the seventh day of illness in a case of measles in which there was a severe flaccid paraplegia. Williams[17] has reported a case of transverse myelitis at the first lumbar level with acute poliomyelitis as a stated cause. Evans[7] ascribes the cause in his case as due to influenza. Having reviewed the clinical and autopsy report, I favor very much the diagnosis of acute poliomyelitis. Pilger[8] considers poliomyelitis in the differential diagnosis of his reported case but finally concludes that the cause was "spontaneous." He mentions among the causes for myelitis: syphilis, tuberculosis, acute infections as small-pox, typhoid, etc., chilling, wetting, excesses, trauma and concussion.

CONCLUSIONS

It is not within the province of this article to enter into a lengthy discussion of the nomenclature, but I wish briefly to emphasize my choice, which is based on pathologic findings. Among the various terms applied to the disease during the past seventy years, none is more applicable than acute poliomyelitis, or possibly acute epidemic poliomyelitis might be used. The former can be employed at least until the organism has been discovered and probably even then continued. We have learned much about the nature of the virus during the past two years through the work of Landsteiner and Popper,[18] Flexner and Lewis,[19] and a number of other investigators. It remains a fact that in a high percentage of cases of acute poliomyelitis the greatest pathologic alterations occur in the anterior horns of the lumbosacral and cervical swellings of the spinal cord and from this the most striking clinical manifestations appear, namely, the sudden, flaccid motor paralyses. In cases in which we wish to designate some particular type, additional descriptive terms used in this paper and elsewhere may be employed in our titles.

Rialto Building.

THE SPINAL CORD IN PERNICIOUS ANEMIA

WITH THE REPORT OF AN INTERESTING CASE OF FAMILY INVOLVEMENT *

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The clinical picture of pernicious anemia and the microscopic findings in the blood are so thoroughly understood at present that they may be passed over without comment, even in a discussion of the changes found in the spinal cord in this symptom-complex rather than disease. It is well, however, to remember that there do exist spinal cord and perhaps brain changes in every case of true pernicious anemia, and that many cases that fail of prompt recognition, owing to nervous symptoms, would at once become clear if this fact were kept in mind. The likelihood that both the clinical picture and the cord degeneration are secondary to and the direct result of a definite toxemia has also occurred to and been hinted at by many investigators. Yet, up to to-day, the nature and source of this toxin and its method of action are still matters of speculation, and even its avenue of approach and of attack are still to be determined.

Lictheim,[1] in 1887, Putnam[2] and Dana,[3] in 1891 and in 1899, and later Pickett,[4] Burr,[5] Spiller, Camac,[6] and in the last months, Camp[7] have all described the combined sclerosis and degeneration of the cord which have come to be well recognized features in not a few instances of pernicious anemia. Spiller has shown that, at least, occasionally, the degenerative process extends into the brain axis; Pickett,[4] and much later, Marcus[8] (1903), and in the current year, Camp[7] have described cases of pernicious anemia in which there became prominent the mental picture and the signs of paresis. There has not yet been reported, however, a case which has suggested so definitely as does that which forms the basis of this brief study the likelihood of a direct causal relation between the intestinal tract and both the peculiar anemic state and the degenerative process in the spinal cord.

The spinal cord lesions of pernicious anemia, as already repeatedly demonstrated, consist of a combined sclerosis of the posterior and lateral columns. Occasionally the posterior columns are alone affected, and there attends a definite clinical picture of tabes dorsalis. The lateral columns never constitute the only field of involvement. There is little tendency to implication of the gray matter or of the nerve-roots, or to contraction and shrinking of the cord, such as are seen in true tabes. Hemorrhages are frequently in evidence and also processes that can perhaps best be explained on the basis of thrombosis of the spinal vessels. Usually the degeneration appears to start in the upper dorsal or in the lower cervical cord, the posterior columns sustaining the earliest and most severe attack. In my case the lumbar cord showed the most marked evidence of disease (Fig. 1). The lateral columns in most cases are also sooner or later involved, and later in the course of the intoxication the anterior horns show both clinical and microscopic signs of disease. There is more or less proliferation of the neuroglia with rarefaction of the nerve fibers and often a complete dropping out of the latter. The cells in the gray matter may show degenerative changes and may be pigmented. Camac and others have described cavity formation in the cord, probably due to edematous softening and consequent degeneration. In Camac's case the cavity corresponded accurately to the distribution of a branch of the anterior spinal artery, and apparently a thrombosis in one of the small veins was the original cause of the excavation. In a word, it may be said that the pathologic process consists of a degenerative vacuolization of the nerve-cells, accom-

11. Frohmann: Ueber einen Fall von Myelitis Transversa mit Muskelwogen und eigentümlichen Veränderungen der elektrischen Reaktion, Deutsch. Arch. f. klin. Med., 1905-6, lxxxvi, 339.
12. Nogues and Sirol: Myelite transverse avec paraplégie flasque d'embolée, Gaz. hebd. de méd., 1899, iv, 601.
13. Ferrori: Di una mielite transversa acuta dorsale inferiore e dei suci postumi, Riv. Veneta di. sc. med., 1896, xxv, 221.
14. Burr: Acute Transverse Myelitis, Med. Bull., Philadelphia, 1896, xviii, 401.
15. Brissaud: Myélite transverse et paraplégie flaccide, Rev. neurol., 1898, vi, 582.
16. Primangeli: Un caso di mielite lombare transversa consecutiva a morbillo, Policlinico, Rome, 1906, xiii, 1161.
17. Williams: Transverse Myelitis at the First Lumbar Level, Louisville Month. Jour. Med. and Surg., Oct. 18, 1911.
18. Landsteiner and Popper: Ztschr. f. Immunitätsforsch, 1909, ii, 377.
19. Flexner and Lewis: THE JOURNAL A. M. A., Nov. 13, 1909, p. 1639.

* Read before the American Association of Pathologists and Bacteriologists, April 5, 1912.

1. Lictheim: Zur Kenntniss der perniciösen Anaemie, Cong. f. Inn. Med., München. med. Wchnschr., 1887, xxxiv, 301.
2. Putnam: Jour. Nerv. and Ment. Dis., 1891, xiii, 69.
3. Dana: New York Med. Jour., 1891, liii, 279; Jour. Ment. and Nerv. Dis., 1899, xxvi, 1.
4. Pickett: Am. Jour. Med. Sc., 1904, cxxviii, 1032.
5. Burr: Univ. Penn. Med. Mag., April, 1895.
6. Camac and Milne: Am. Jour. Med. Sc., 1910, cxxxix, 563.
7. Camp: Med. Rec., New York, Jan. 27, 1912.
8. Marcus: Neurol. Centralbl., May 16, 1903, p. 453.

panied or rather succeeded by a replacement gliosis.

A considerable number of cases have been reported in which the anterior horns were involved to such an extent that the clinical amyotrophic result was confused with emaciation and obscured the diagnosis. This is an occurrence of the late stages of the intoxication, however, and in view of our present information it would seem as though this confusion should no longer be necessary, even though the blood-picture may not yet have assumed the definite character of pernicious anemia and of pseudocombined sclerosis (Fig. 2).

The case which forms the subject of this paper is of interest from more than one direction.

Family History.—The patient, A. C. W., was a single woman, 43 years of age. Her family history was very striking, and was in brief, as follows: Her father died at 60 years. He had suffered from "asthma," dropsy and "had a stroke." The picture is at least suggestive of a uremia. He had also had hemor-

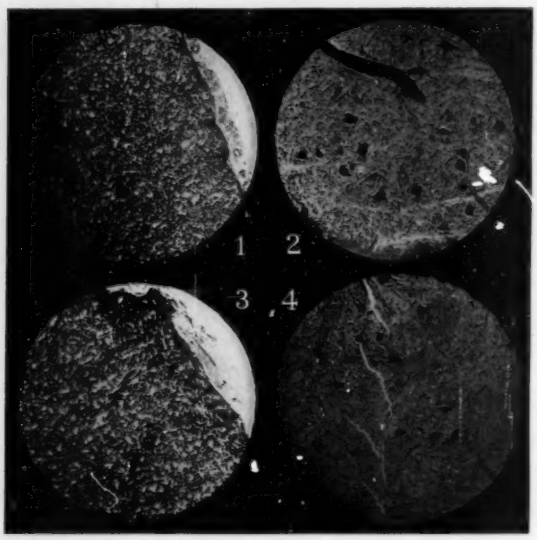

Fig. 1.—Author's case of pernicious anemia. Cross-section of lumbar cord showing marked evidence of disease of the posterior columns.

Fig. 2.—Cross-section of lumbar cord showing involvement of the anterior horns.

Fig. 3.—Cross-section of upper thoracic cord showing degenerative changes in the white matter.

Fig. 4.—Cross-section of upper thoracic cord showing degenerated cells in anterior horns.

rhages from the bowel, though not recently before his death. The patient's mother is alive at 79, and has aortic insufficiency with cirrhosis of the liver. One of the patient's aunts on the mother's side had hepatic trouble, and suffered from angina pectoris and Bright's disease. Another aunt on the same side died of pernicious anemia. Jan. 17, 1907, her blood record was as follows: red corpuscles, 955,000; leukocytes, 3,000 per c.mm.; hemoglobin, 32 per cent.; color index, 1.77. A number of megaloblasts and a few normoblasts were noted. A brother of the mother died at 68 from mental trouble. One sister died a year ago from tabes in a grave anemia (seen by me). Two of the patient's brothers are living, but are invalids. One of these shows a marked atrophy of the muscles of the right side consequent on early anterior poliomyelitis, also some renal and bladder involvement. This brother has had glaucoma of one eye, and was operated on for this condition ten years ago. Another brother has kidney disease with "puffing under the eyes."

Previous History.—The earliest record obtainable of the patient indicated normal health up to the sixteenth year, after which she showed a marked tendency to severe colds. She had two attacks of congestion of the kidneys between the nineteenth and twenty-ninth years, and suffered a pleurisy also during this period. The severe colds in the head and throat have continued up to the present time, and have always been accompanied by indigestion, which has gradually developed into the severe mucous enteritis that preceded the patient's death. Her menstruation was always irregular in time and quantity. In 1911 the patient was taken to the West Philadelphia Hospital for Women for an intestinal attack with eructations of gas, and with considerable abdominal tenderness. In October, 1911, she experienced severe pain under the right breast increased by pressure over the gall-bladder. This attack began with eructations of gas, lasting for hours.

Through the courtesy of the institution and of Dr. Williams I am able to present the notes of her illness at that time. In January, 1911, she had menstruated very profusely; then again in March, in June, July and August, but not after that time. In February she had considerable bleeding from the bowel, with intense soreness over the abdomen. She also suffered much from cardiac arhythmia and palpitation, both evident to herself. While in the hospital she had much nausea and gastric distress, which were relieved at times for a day or two, but returned in sudden and acute attacks. During these attacks the face was flushed and the pupils unequal. Most of the time the pupils were markedly contracted. Following the excitement of such an attack the temperature rose, but was usually normal. Pelvic examination was negative. Abdominal examination showed ptosis of the stomach and intestines, with areas of tenderness on palpation about the umbilicus and over the gall-bladder. The heart and lungs were normal The red corpuscles numbered 6,500,000, and the leukocytes, 15,900. The feces showed much mucus, but no occult blood.

An examination of her eyes by Dr. Stratton in 1901 showed: right eye, media clear, bright reflex from vessels, deep central physiologic cup, and the edges of the nerve hazy; left eye, media clear, nerve-head hyperemic, otherwise same as the right eye. In 1909, muscular insufficiency, both vertical and lateral, refraction findings and vision practically the same as in 1901.

Current History.—The patient was first seen by me in consultation with Dr. R. R. Williams on Dec. 21, 1911. She had for a year been suffering from gradually increasing disability and discomfort in the form of weakness and lightning pains in the extremities, in addition to her long-standing gastro-intestinal trouble. She had also been experiencing, with increasing frequency, severe gastric crises, comprising pain, nausea and vomiting. A constricting girdle pain was described by the patient herself as severe about the level of the ensiform cartilage. There was a frequent and copious eructation of gas and considerable blood was passed at times from the bowel. During the last weeks an increasing and finally a very marked pigmentation of the skin was noticed until the entire body was dark brown, while over the abdomen especially around the umbilicus there was an area almost black in color. Over the buttocks and the posterior surfaces of the upper arms and of the elbows there was a similar intense pigmentation. There was no emaciation. The patient could stand, but would fall at once when the eyes were closed. She complained bitterly of intense tingling and pain in the extremities, especially in the hands and fingers, and described an aura of this type preceding the gastric crises. During the last ten days of her life large hemorrhagic blotches appeared on the elbows and over the knuckles of both hands. These rapidly changed to hemorrhagic blebs, which soon ruptured leaving extensive ulcerations in their place.

Examination.—The mucous membranes were blanched and extremely anemic, and here and there over the buccal mucous membrane were patches of brown pigmentation. There was no jaundice. Pressure over the sternum and long bones elicited marked tenderness. Both pupils were very small and completely fixed. There was no reaction to light, and a very slight response to distance accommodation. Both patellar reflexes were completely absent as were also the Achilles tendon and the plantar reflexes. Babinski's reflex was not present on either side. The finer acts of accommodation and coordination were all embarrassed and imperfect. While being examined the

patient had several attacks of severe pain, mainly in the lower limbs, undoubtedly lightning pains. There were areas of moderate hyperesthesia, as well as less extensive areas of complete anesthesia scattered over the body. The heart and lungs appeared normal, except for indicating a general debility. The abdominal organs including the liver, spleen, appendix, uterus and adnexa showed no abnormality on palpation. The abdomen was generally sensitive, but presented no localized area of involvement. The urine contained a small quantity of albumin and a few hyaline and hyalogranular casts. The feces contained much blood, mucus and undigested food but no parasites or ova. The blood examination gave hemoglobin, 50 per cent.; red blood-cells, 3,060,000; leukocytes, 8,000. There were considerable poikilocytosis and polychromatophilia and occasional nucleated red cells, mainly normoblasts, were found.

Autopsy.—The body was examined Jan. 8, 1912, the day following the death of the patient. The skin and mucous membranes were found pigmented, as already described; also the large sloughing areas over the elbows and knuckles which had taken the place of the hemorrhagic bullæ were still present. In the thorax, the only organ that presented any special abnormality was the heart, which was small, very flabby, with an evident insufficiency of all its valves. Just outside the aortic ring, also around the opening of the right coronary artery and over the surface of the left auricle, were patches of atheromatous deposit. In the wall of the left auricle and in the posterior cusp of the mitral valve were two atheromatous and calcified nodules. The abdominal organs were all intensely anemic and showed the changes characteristic of pernicious anemia. In the kidneys were evident many distended and injected vessels. The adrenals appeared merely anemic. The intestines showed an extensive inflammatory process with considerable erosion of the duodenum. The colon was eroded from the cecum to the anus and in places there were found areas of shallow ulceration. The stomach was dilated, its mucous membrane considerably injected, its muscular wall very thin, but there was no ulceration present. The brain showed no abnormality. The dorsal, lumbar and sacral portions of the spinal cord were removed.

Microscopic Examination.—Dr. William G. Spiller, who very kindly examined the sections for and with me, coincides in the following report on the spinal cord involvement. Sections were examined from various portions below the cervical region, including the dorsal, lumbar and sacral segments. Degenerative changes were found throughout the white columns. These resulted in a dropping out of nerve-fibers leaving numerous holes in place of the fibers which had disappeared. This resulted in the characteristic lace-work appearance which is so beautifully shown in Figure 3. There was very little proliferation of neurogliar tissue. There was approximately a similar and equal involvement of the posterior and lateral columns. The nerve-cells of the anterior horns of the lumbar region were considerably affected. Many were swollen and in many others pronounced chromatolysis had occurred. The degenerative changes were those which are usually seen in the tissues of the spinal cord in pernicious anemia.

The foregoing history and autopsy protocol present especial interest from the standpoint of the possibility of establishing a definite etiology for the clinical symptoms and for the pathologic lesions as found during life and later under the microscope. Unfortunately, the patient was not suspected of developing either pernicious anemia or pseudocombined sclerosis at a stage of the disease at which there may have been present spastic symptoms (at least exaggerated reflexes), and at which she might have suggested the presence of involvement of the lateral columns. The spinal picture from the time it came under my notice was definitely one of posterior column involvement plus, during the last days of life, involvement of the anterior horns with suggestive trophic changes.

Very striking, however, is the clinical indication of a pathologic intestinal process dating back to childhood and terminating only in the gastric crises which indicated perhaps the final influence of the auto-intoxication on the spinal cord. In a previous clinical communication I called attention to the symptoms of intestinal decomposition and auto-intoxication comprising just such a series of "colds" as that which the patient under consideration presented during her entire lifetime. In view of her entire freedom from involvement of the respiratory apparatus, as evidenced both by the physical examination and by the autopsy findings, there would seem to be little room for doubt that this patient had suffered for many years from a toxemia, metabolic in origin, and that the gastro-intestinal tract had been its manufactory. It seems evident that this toxemia led up to, even if not finally demonstrated as being the direct cause of the pernicious anemia, of the spinal cord degeneration and sclerosis, and of the fatal termination of the case.

Of no slight interest, moreover, is the series of instances in the patient's near and immediate family connection of pathologic clinical pictures which suggested not only a definite relation between the pernicious anemia and combined sclerosis of this case and the father's arteriosclerosis and uremic "stroke," the mother's aortic insufficiency and hepatic cirrhosis, with the renal sclerosis and angina pectoris of one aunt, and the pernicious anemia of another, to say nothing of the death of a third aunt (all three sisters of the mother) in an advanced stage of locomotor ataxia. A brother of the mother died of "mental trouble," the exact nature of which could not be determined. It does not seem at all unfair to consider the possibility, if not the probability, of a hereditary luetic influence running throughout this long series of circulatory and nervous involvements (Fig. 4).

Especially in that type of case in which the picture of locomotor ataxia has been prominent, or in which the mental phase of paresis has been definite and prominent there have been many recent attempts to demonstrate the syphilitic origin of pernicious anemia. As in the case reported by Camp, however, both the negative Wassermann test, the negative findings in the cerebrospinal fluid, and the absence of the Argyll Robertson pupil, in many instances argue against a positive statement in this direction. C. W. Field has recently informed me of four cases of pernicious anemia studied by him of which one furnished a positive Wassermann reaction, and three reacted negatively. He also writes of "seven cases of grave secondary anemia which from their blood-picture resembled pernicious anemia very closely. Two of these gave positive reactions and both patients admitted having contracted the disease some years before. In the five negative cases the patients denied a syphilitic history and showed no signs of syphilis."

A history such as that submitted to-day, together with microscopic findings of the character noted in the sections of the cord now submitted, cannot fail to indicate the strong possibility, and perhaps the probability, of the intestinal origin of not only pernicious anemia, but of the pseudocombined spinal sclerosis. Berger and Tsuchiga[9] have apparently shown that in pernicious anemia there is in the intestinal mucosa a lipoid ten times more powerful as a hemolysin than the lipoid from the normal mucosa. This has not been shown, however, to have any influence on the spinal cord. The relation

9. Berger and Tsuchiga: Deutsch. Arch. f. klin. Med., 1909, p. 252.

of true tabes dorsalis to syphilis is too well understood to require any comment here. The working of syphilis through the gastro-intestinal tract and its influence on the blood and on the spinal cord through a gastro-intestinal autotoxemia, have not been so thoroughly considered, and this theory is offered not without a certain measure of plausibility in the case under study. It is satisfactory, at least, in meeting the requirements of this individual case, in which from childhood there were present signs of gastro-intestinal disability. The deep pigmentation is interesting from one standpoint only, that of its severe degree. Pigmentation is so common in pernicious anemia that ordinarily it calls for no comment especially in cases that have been treated with arsenic. The hemorrhagic bullæ on the knuckles and elbows and the subsequent open ulcers were unusual, and apparently combined the customary tendency to hemorrhage with distinct trophic change. It would seem as though the case were almost certainly one of pernicious anemia, perhaps due to hereditary lues, and that the somewhat similar cases in two of the patient's maternal aunts were in close relation and to be attributed to the same etiology.

1708 Locust Street

DIFFICULT AND DANGEROUS LABORS

SELECTING THE METHOD OF DELIVERY *

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We have but recently entered a new era in obstetrics, disregarding the traditions and prejudices of the past according to which the infant was in every case sacrificed whenever in its unaided efforts to be born it in any way conflicted with the maternal well-being.

In the present era we maintain that those who practice obstetrics must keep in mind that the primary purpose of conception is reproduction, and that obstetrics is successful only when we deliver a live, healthy child from an unmutilated mother. The progress has been along surgical lines and the technic of the different procedures has been fairly well outlined, but as yet we have been unable to define distinctly the fields belonging to craniotomy, axis traction, forceps on the floating head, pubiotomy, vaginal cesarean section and abdominal cesarean section.

Regardless of the surgical progress which obstetrics has made, we cannot forget that the most important indication in obstetrics is to interfere only when the mother or child is in danger.

Speaking of craniotomy, I will pass it possibly too briefly and perhaps in a dogmatic way, by stating that it has no place in obstetrics except when the fetus is dead or when the traumatism prior to having been seen by the obstetrician has been so severe that a living child cannot be secured. Under these circumstances the child's welfare is ignored and we consider only the fact that it offers, in the infected cases, a lower maternal mortality. If we add to this the few cases in which deformities exist (hydrocephalic heads, monsters, etc.) it would seem that we have fully covered the field for this procedure.

In defining the fields for high forceps on the floating head, or when the head engages in the superior straight, pubiotomy, vaginal cesarean section and cesarean section, we must at the beginning consider the personal equation of the operator, his familiarity with the different methods of procedure, and the following factors which at present can only be partially estimated: (1) an absolutely accurate pelvic measurement; (2) an absolutely accurate measurement of the fetal head; (3) an accurate idea of the degree of molding of which the particular head is capable; (4) an accurate estimate of force required; (5) an accurate estimate of the expulsive powers of the mother; (6) an accurate estimate of the possible duration of the expulsive forces.

All of the above factors enter into the progress of a normal labor, and as they vary from normal in degree, so will the progress of labor become complicated by vicious mechanism, extension of the head, prolapse of the cord, injuries of the soft part by tears on account of rapid extraction or sloughing of the parts from prolonged pressure and injuries to the bony pelvis such as separation of the symphysis or traumatic injuries to the sacro-iliac joint.

The diagnosis of contracted pelvis is not difficult and the greater the deformity the easier the diagnosis, but in a moderate degree of pelvic contraction it is difficult to recognize or appreciate the degree of malformation and the influence it will have on labor. Even though much progress has been made in estimating the pelvic capacity in the living subject, we must still acknowledge that our present means are defective, as by neither the hand nor the pelvimeter can we accurately measure the pelvis, and the more frequently we are put to the test the more ready we are to acknowledge our shortcomings in this respect, and to admit that at best we get but a general impression of the pelvic capacity. Perhaps I am even safe in saying that without regard to the skill of the obstetrician or the opportunity afforded, we can rarely rely on the accuracy of the measurements within a half centimeter. It is folly to pretend that it is always possible to tell just how the fetal head will fit the maternal bony pelvis, and again we must admit that difficult as it is to measure the pelvis, it is much more difficult to measure the head *in utero* and it is only after considerable experience that we can even tell if the head is large or small, and prior to the test of labor, the amount of molding possible is a matter of pure speculation.

It is a matter of great importance to separate those patients on whom cesarean section should be done from those patients on whom we can expect a safe delivery through the birth canal. This distinction is readily made in the absolute indication or cases in which the true conjugate is 7.5 cm. or below, but in cases in which the conjugate is between 8 and 10 cm., our knowledge of the subject is not developed to such an extent that doubtful or transitional cases will not remain. Probably our best method of getting this information is the bimanual method of grasping the fetal head in the paw-like grip while the other hand is introduced into the vagina to feel all around the head and see how it is engaging, noting whether or not it overrides the symphysis pubis and, if so, to what degree. After examination, if all of these factors have proved satisfactory, we have reason to believe that with normal expulsive power on the part of the mother and an average duration of labor, we can ultimately expect a successful outcome. It is, however, this estimate of the relative size that should form the basis of treatment.

It is important that we lay stress on the normal expulsive powers and remember that labor is a test of the muscular power of the patient in combination with her ability to endure pain without severe exhaustion.

* Read in the Section on Obstetrics and Gynecology of the American Medical Association, at its Sixty-Third Annual Session, held at Atlantic City, June, 1912.

Reynolds has so clearly pointed out that pregnancy precedes labor and that pregnancy itself has applied the primary test to all the organs concerned in labor, that is, muscles, heart, nervous system and organs of elimination, that a careful observation of our patient beforehand should largely separate the two principal classes, the first class being a woman who is physically unfit for the strain of pregnancy and labor. This class is usually, but not necessarily, among the well-to-do—those who are carefully guarded from infancy against all suffering or even muscular exertion and are intolerant of delay, irritable and possibly present a history of previous nervous exhaustion. On the other hand, we encounter individuals who in a general way look very much as these patients may look, but they are thin, strong, wiry individuals and capable of a surprising endurance.

In the two types of cases the relatively different condition will necessitate diametrically opposite procedures for delivery. The patient of the first type becomes readily exhausted, intolerant of pain; labor pains soon become more or less continuous, the patient refusing to use them to the best advantage, ultimately necessitating a cesarean section to produce a satisfactory result, even in slight degrees of pelvic contraction. The patient of the second type tolerates the pains well, using them judiciously, and conserves her energy in every possible way, with that endurance and determination which will force through the pelvis many a head that would otherwise stay above the superior strait. These types of women offer a very marked contrast. The latter uses judiciously every possible ounce of force in her body, while the former, becoming intolerant of her pain, irritable and restless, soon develops a marked lack of muscular tone and a power quite insufficient to expel an average-sized child through a normal pelvis. After labor lasting sufficiently long to terminate the first stage, the pains become inefficient and labor makes no progress at all. It is in this position that we frequently find ourselves and we must then determine which procedure will give us the best result; we must select between high-forceps operation, if the os is dilated, on either the floating head or a head that is engaged in the superior strait, version, cesarean section or pubiotomy.

I am firmly convinced that the infantile mortality of high-forceps operation will improve but slightly, as it necessarily ignores either the maternal pelvis or the child's head in the method of application. That is, we must select between a cephalic application or a pelvic application of the forceps, accepting the usual maternal morbidity and mortality with its appalling infantile mortality, while as an alternative we may do a cesarean section, pubiotomy or version.

Considering the expulsive power of the mother, you must take into consideration the general muscular tone of the patient and the ability of the heart and the vital organs to stand the test of strength applied during her pregnancy. This probably is best done by having the patient regularly and systematically take exercise, increasing this up to a reasonable degree, remembering, however, that muscular tone is not brought about in a day or even in the length of time which our patients are ordinarily under observation, and that a uterus that has not functionated until well along in the child-bearing period of the mother cannot and will not develop the strength that we would expect in a younger patient. In other words, in an elderly primipara we have to deal with a senile uterus, the energy of which is greatly reduced by the age of the patient, and in this class the uterus soon shows signs of exhaustion; and even in cases in which we have to deal with a child of average size and a pelvis of normal measurements, we may find ourselves with an exhausted patient, an undilated os and an unengaged head, necessitating the election of some surgical method of delivery.

Kerr has shown by an analysis of fifty-three cases in the Glasgow Maternity Hospital, in which the conjugate was between 8.1 cm. and 9.1 cm., that all were capable of spontaneous delivery with two fetal deaths, one due to prolapse of the cord and one death the second day, the cause of which is not given. This corresponds with my own experience in having two patients who spontaneously delivered themselves with a conjugate vera of 7.5 cm. with a flat type of pelvis. The weight of the children was 2,600 gm. and 3,080 gm. Both patients were young, in the working class, tolerant of pain, and stood the second stage of labor lasting about nine hours with but little complaint. In these cases but two vaginal examinations were made, as we aimed to give them the test of labor without also testing the number of virulent bacteria which could be introduced into the birth canal and the patient live. We had anticipated a cesarean section, but remembering the words of Barbour, "The fetal head is the best pelvimeter," our hesitation to interfere until the maternal or fetal conditions demanded it saved the patient what would have been an unnecessary operation. If, however, either of these two patients had presented in the superior strait in the occipital posterior position, flexion either more or less than was required for engagement, the size of the head greater than was anticipated, or molding less than was required, a cesarean section could and would have been done as soon as it was determined that the head could not be made to engage in the superior strait and without any increased danger to the mother.

On the other hand, with a perfectly normal pelvis, at times our best results will be secured by cesarean section.

CASE 1.—In case of Mrs. S., aged 38, water ruptured Sunday evening; there was slight pain one hour afterward, which continued Sunday night, Monday night and Tuesday and final examination on Tuesday at 10 p. m.; maternal temperature 100.2, pulse 110. Patient's condition was somewhat exhausted; there was continuous pain; it was not possible to determine Bandall's contraction ring on account of the thick, fat abdominal wall, the child's head floating free above the superior strait, cervix thin, absorbed and dilated about 5 cm. The patient was told a high forceps or version would cause an infantile mortality of about 15 per cent., some laceration of the cervix and perineum. A cesarean section would surely be a success as far as the infant was concerned and would be subjecting the mother to a danger of about 4 per cent. (which is greater than I believe the mortality will be). She elected a cesarean section and made an uneventful recovery with the exception of some bladder irritation which responded promptly to two irrigations, leaving one ounce of 10 per cent. solution of argyrol in the bladder to be voided with the next urination. In conducting the delivery but four vaginal examinations were made and the patient was as free from danger of infection, or nearly so, as if a primary cesarean section had been done, and certainly no one would have been justified in doing a primary cesarean section in this case unless it was that obstetrician's practice to do so in all elderly primiparæ with early rupture of the membrane and senile uterus—the class to which this patient belonged.

It would seem that no harm is done patients in borderline cases (C. V. about 8 to 10 cm.) to decide by allowing them to be in labor a moderate length of time, or to be more definite, about the average time for the completion of the first stage of labor.

Routh collected 1,282 cases of cesarean sections which he divides into classes, A, B, C and D. Classes C and

D will not be considered here as they represent his infected cases. Class A, designated as not in labor, contains 245 cases with nine deaths, or 3.6 per cent. maternal mortality; Class B, in labor, membranes intact, 224 cases, five deaths, mortality 2.2 per cent.

In the relatively few cases in which the degree of error has allowed the head to become firmly impacted in the pelvis and it requires but a very slight degree of enlargement to permit of its safe expulsion, a pubiotomy can be resorted to.

CASE 2.—As a case in point, Mrs. H. entered the hospital Nov. 7, 1908, a catheter was introduced into the uterus to induce labor. She was advised by friends to leave the hospital and did so a few hours later (during my absence). On November 30, I was telephoned to that she had been in labor forty-eight hours and was willing to return to the hospital where I saw her a few hours later, finding the head well molded, flexed and firmly impacted in the superior strait of the pelvis. A pubiotomy was done and the patient delivered of a healthy, living child. About two years later she was again delivered by the induction of labor at the thirty-sixth week.

It is unnecessary to detail some nineteen cases of this kind but suffice to say that I have had no mortality and no morbidity except one case in which secondary repair work was done. In the eight cases I have been able to follow, all of the patients are able and most of them do such work as is necessary in the average life of women. (Five cases were shown at a clinical meeting of the American Gynecological Club.)

In outlining the field for pubiotomy, I should think it of greatest importance to select only those cases in which but a slight increase of the conjugata vera will permit the passage of a living child, and it is of special importance that sufficient trained assistance be at hand to prevent more than about 3 cm. separation of the pubic bones. It will never be a popular operation, will always have some morbidity, increasing in degree with the disproportion which exists, but in its limited field has a place in obstetrics.

Unfortunately, it is still the custom among some who practice obstetrics to apply forceps as soon as labor does not progress as fast as they feel it necessary, or they yield to the importunities of the husband and friends and apply forceps simply because the child has not been born, without any knowledge of the relative size of the pelvis and its passenger. It is frequently my experience to meet an anxious husband in the hall of the hospital and on inquiry as to the necessity of bringing his wife to the hospital I am told that one or two, and on one occasion, three physicians had tried to deliver with forceps and are now all tired out, finally suggesting moving the patient to the hospital in order that a fresh man could apply the necessary traction. In these cases it is usually not great strength that is needed, but an understanding of the fundamental principles of obstetrics. The cervix, closed or open, is not the rock on which the decision must be made, but the real question is, "Can the head descend into the superior strait and is it now engaged or can it be made to do so?"

It is in this class that we are called on to correlate the facts secured by our instruments of precision and the ear and finger, and above all, our estimate of the patient's reserved strength and the vitality of the child. Frequently our arch-enemy (meddlesome interference) has burned the bridges behind us and we must proceed by the vaginal route.

SUMMARY

1. The normal progress of labor should be interfered with only when mother or child seems to be in danger.

2. Judgment of each individual case should be carefully formed, applying all the known methods for measuring the pelvis, the size of the child's head, and placing special importance on the possibility of engagement or non-engagement as the result of pressing on the uterus and using the finger in the vagina, and the paw-like grip over the child's head.

3. Due consideration should be given to the fact that a competent obstetrician has previously had difficulty and has secured a dead child from high application of forceps.

4. As labor progresses, the border-line cases must be so conducted and at such a place as to permit of a cesarean section in preference to an application of high forceps, in case progress is not satisfactory and there seems to be a reason for hastening delivery.

5. These cases should be conducted largely by abdominal palpation, judging of the descent by this method in preference to frequent and many times unnecessary vaginal examinations.

6. In the absolute indications for cesarean sections, they should be preferably done as soon as the patient fairly enters labor, accepting as evidence of the opening of the os some slight vaginal discharge or, if necessary, one examination. In the relative indications for cesarean section they should be done prior to the time that the patient shows an unusual degree of exhaustion and preferably prior to the rupture of the membrane.

7. In elderly primiparæ the possibility of a senile uterus must frequently be the determining factor between spontaneous delivery, high forceps and cesarean section.

8. High forceps should be applied only in cases in which the surroundings of the patient do not justify an abdominal cesarean. The physician must be prepared to accept an infantile mortality in excess of 15 per cent., with a maternal mortality equal to elective cesarean section, plus a not inconsiderable morbidity.

9. Pubiotomies should be done only when sufficient assistance is at hand to prevent undue separation of the pelvic bones and in cases in which a very slight increase of the conjugata vera is known to be sufficient to permit the passage of a living fetus.

10. It should always be kept in mind that craniotomy has no place in obstetrics on a living child, and the physician should avoid putting himself in the position of having to sacrifice one life to save the other when both should have been saved.

219 Sixth Street.

CESAREAN SECTION *

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The history of cesarean section is exceptionally interesting. But what concerns us most is this fact, that from a last-resort procedure of the utmost danger, it has evolved into one of the safest abdominal operations in the hands of the experienced abdominal surgeon.

Statistics show a fairly high mortality rate, but if these are analyzed, it will be seen that nearly all fatalities occur in patients exhausted or septic from prolonged obstetric abuse, or that death is due to the complication for which the operation is performed. For instance, in case of dystocia due to obstruction of the birth-canal, in which no other method of delivery has been attempted and there has been an early resort to operation, the

* Read in the Section on Obstetrics and Gynecology of the American Medical Association, at its Sixty-Third Annual Session, held at Atlantic City, June, 1912.

mortality is practically *nil*. That the operation in itself is simple and harmless is the point that should be borne in mind in its application for the relief of such conditions as placenta prævia or eclampsia.

The general technic is that of other abdominal operations. The best hospital facilities are not too good. A skilled assistant is more than usually essential. The abdomen is prepared in the conventional manner for laparotomy. The incision is made from just below the umbilicus, downward. It is usually of sufficient length, though it may sometimes be found expedient to enlarge it slightly upward, to the left of the umbilicus. A soft towel, warm and moist, is placed above the fundus for the protection of the intestines. An assistant, with a hand on either side of the abdomen, rotates the uterus and exerts moderate pressure downward and forward, bringing the anterior wall close to the abdominal incision. If clear of the placental attachment, the anterior wall of the uterus is incised in the median line from a point about an inch above the vesical attachment, upward, to a sufficient distance for delivery. Incision below the umbilicus offers better facilities for removal of the uterus in case it is deemed necessary, and I have observed that the low uterine incision, apparently, does not come in contact with the parietal peritoneum.

The membranes are ruptured and the child delivered as quickly as possible. The cord is clamped and cut. In the meantime, the assistant is exerting still firmer pressure and the placenta is usually presenting at the incision, ready to be removed. This is accomplished promptly and the uterus is forced through the abdominal wound. Hemorrhage may be controlled by having an assistant make pressure on the broad ligament, though it is usually unnecessary. The uterus is grasped at either angle of the wound and pressure exerted in such manner as to control hemorrhage and evert the edges, thus facilitating the introduction of the stitches. At this point, the soiled linens are supplanted by fresh field cloths.

Sutures may be of linen or catgut. I prefer linen and place them as accurately as possible at intervals of half an inch. They are introduced close to the edge of the wound, include peritoneum and muscle down to the endometrium and are securely tied and cut close. In some parts of the wound it may be found necessary to coapt the edges with additional sutures of fine catgut. The abdomen is closed as in the case of any other section.

I do not ligate the tubes or resort to any other expedient in order to prevent future pregnancy. I consider, if it is so deadly wrong to render a woman sterile for an ulterior motive, that I must be sure of my justification to do so in any event, and am glad to let my responsibility end when I have relieved the condition at hand, and console myself with the reflection that repeated cesarean section is not such a terrible catastrophe after all.

After-treatment is about the same as that of other abdominal operations. I have not found it necessary to administer ergot in my cases. The patient may nurse her baby as soon as she feels able to do so, usually within the first twenty-four hours.

In a general way, cesarean section may be said to be indicated in all cases of maternal or fetal dystocia, in which other methods of delivery are extra hazardous to either mother or child. The indication is absolute, if by other methods delivery can be accomplished only by the sacrifice of the intra-uterine life.

It is not my purpose to discuss the ethical question of our justification in destroying the life of the child in the interests of the mother. The end is supposed to justify the means. The same humane reasoning has brought forward those who advocate the hastening of the inevitable in the case of the suffering incurable, but the moral doubt and the knowledge of the fallacy of prognosis has limited the number of adherents to this plan of relieving distressed humanity.

The therapeutic abortion is sanctioned by law and the medical profession generally; but there is a wide range of opinion as to the indications for its use.

Unquestionably, the lives of many women have been preserved; it is probable also that some have died by the very methods intended to save them; undoubtedly many children have been sacrificed needlessly. It is presumptuous of us to speculate on the relative value of these lives.

To terminate the intra-uterine life is then, to say the least, a matter to be approached with the gravest sense of responsibility instead of the cheerfully lax manner that too frequently prevails.

About three years ago, a patient was referred to me by her family physician for the purpose of emptying the uterus three months gravid. The woman had a contracted pelvis and the operation was considered justifiable by all concerned except myself. The patient finally accepted the risk of cesarean section. I later called an obstetrician in consultation who induced labor in the thirty-fourth week. She has two living children, each delivered at the same period of gestation.

Some months ago a physician of good repute had admitted to a perfectly reputable hospital a woman six months pregnant, and proceeded with all gravity, and no attempt at secrecy, to induce labor. I learned that the only indications for emptying the uterus were that the woman was so determined to rid herself of her pregnancy that she threatened, unless relieved, to commit suicide and that her husband was put to the inconvenience of hiding his razor and other implements of destruction.

A recent article on cesarean section reports a series of operations with brilliant results to both mother and child, in which the patient was permitted to decide the choice of treatment as between an early termination of the pregnancy and cesarean section.

We all know many instances of prospective mothers unwilling to undergo the inconvenience incident to pregnancy, unwilling to risk the danger of possible eclampsia, of possible placenta prævia, and so forth. They consult the criminal abortionist who, if he cared for justification, could find it in the acts of reputable men who hold the life of the unborn child so cheap.

The best way to discourage infanticide is to make it *seem* a greater crime.

The indications for cesarean section, quoting Amand Routh, are:

A. Obstruction to labor: (1) pelvic contraction; (2) fibromyomas; (3) cancer, cervix or vagina; (4) ovarian tumors; (5) other pelvic tumors; (6) stenosis, cervix or vagina; (7) miscellaneous: previous ventrifixation, tonic contraction of uterus, hour-glass contraction, prolonged gestation.

B. Uterine hemorrhage: (1) concealed accidental; (2) placenta prævia.

C. Constitutional crises: (1) eclampsia; (2) miscellaneous, chorea, advanced heart disease, obesity and anasarca, myasthenia gravis.

Time will not permit the consideration of them all.

Routh gives a conjugata vera diameter of less than 8.1 cm. as the indication for the cesarean operation in contracted pelvis.

It should be the object of the obstetrician or physician in charge to make his diagnosis and arrive at an early decision as to future treatment. In reaching his conclusions, he may bear in mind that the mortality of cesarean section is about the same as that attending the use of high forceps and that the risk of the operation increases proportionately to the severity of previous manipulations.

Without regard to pelvic measurements, it is of the greatest importance to determine the relative size of the child to the canal through which it passes. Two of my fatal cases occurred in women with normal pelves. In one, the dystocia was due to a large child weighing 13½ pounds, in the other to a large unyielding fetal head. In these instances, the fact that the pelvis was normal and that each had previous normal deliveries encouraged the physician in charge to renewed efforts to deliver by the natural route.

In spite of the fact that craniotomy offers little, if any, greater safety to the mother, it is, I regret to say, sometimes the operation of choice. Can any justification whatever be offered? It is more frequently the operation of choice in those cases in which prolonged attempts at delivery have rendered the patient a hazardous risk for laparotomy.

It is here that we may ask ourselves, what percentage of risk to the mother justifies the physician in administering certain death to the child? Is it 5 or 10 or 20 or 50 or 90 per cent.? Shall each physician be a law unto himself? Shall he be influenced in his decision by the patient or by her friends?

It would simplify matters greatly, and stimulate us to greater endeavor to save both lives if we could bring ourselves to believe that we have no right to take one life in order to avoid a percentage of risk to another. Is it not clearly the duty of the physician to choose some method by which the lives of both may be preserved? It is especially the physician's duty so to do, in the light of our present knowledge. It must be remembered that the patient is a hazardous risk for any operative interference and it is doubtful if craniotomy is less dangerous than is some form of the cesarean operation. Suprapubic hysterectomy in some cases; the Porro or suprasymphyseal section in others.

Placenta prævia is still an obstetric problem of great importance. The mortality, according to McPherson, is from 11 to 18 per cent. in hospital practice, while the fetal mortality is 40 to 57.3 per cent. To improve the mortality rate, both maternal and fetal, is an end devoutly to be wished for. The dangers are hemorrhage and sepsis. The indications of treatment are to prevent or check hemorrhage and to empty the uterus.

From a surgical point of view the quickest, surest and cleanest method of procedure would be cesarean section. It is instructive that cases are reported in which vaginal methods were attended with such trauma and hemorrhage that hysterectomy had to be performed as a last resort, and still the patient survived. McPherson, in the article quoted above, places the maternal mortality in cases of placenta prævia in which cesarean section has been performed as less than 4 per cent.

I believe that it is conservative to state that the operation is indicated in this condition in all cases of central placenta prævia, and in all cases of the partial variety with living child at or near term, provided that adequate surgical skill is available and the patient is in such condition as to be a fair operative risk.

In eclampsia, cesarean section is a therapeutic agent of value. It empties the uterus quickly; it lowers blood-pressure by the attendant loss of blood; it adds to the safety of the child; it does away with the trauma and other dangers incident to forcible dilatation of the cervix. It is indicated in primiparæ with rigid undilated cervix or any condition in which other methods would cause delay or unusual trauma to mother and child. I have had occasion to operate twice in this condition.

In one instance the patient, a primipara in the eighth month of pregnancy, was admitted to the hospital unconscious. She had had four convulsions. Temperature was 103, pulse 130, respiration 26; the small quantity of urine that I was able to obtain by catheterization was solid albumin. Blood-pressure was 210; cesarean section was performed at once. Blood-pressure taken immediately after patient was returned to her room was 160. Both mother and child left the hospital in good condition.

In the other case the patient was unconscious when she entered the hospital. She had one convulsion after being

TABLE 1.—PATIENTS OPERATED ON AT PERIOD OF ELECTION

No.	Date	Indication	Result Mother*	Result Child†	Remarks
1	6/21/06	Rachitic dwarf	+	+	Successful cesarean operation eight years previous.
2	11/16/06	Carcinoma of cervix	+	+	Cervix amputated by cautery in sixth month of pregnancy.
3	4/3/07	Fibroid obstructing birth-canal	+	+	Suprapubic hysterectomy.
4	12/2/07	Fibroid obstructing birth-canal	+	+	Suprapubic hysterectomy.
5	1/12/08	Ventrifixation of uterus	+	+	Transverse position.
6	10/3/10	Fibroid obstructing birth-canal	+	+	
7	11/15/10	Rachitic dwarf	+	+	Suprapubic hysterectomy.

TABLE 2.—MISCELLANEOUS

No.	Date	Indication	Result Mother*	Result Child†	Remarks
1	10/7/03	Excessive fetal development	—	—	Cause of death, shock.
2	4/4/09	Large non-molding fetal head	—	—	Cause of death, streptococcus infection.
3	11/11/09	Impacted face presentation	+	+	
4	1/23/10	Excessive fetal development; rupture of uterus.	—	+	Cause of death, nephritis.
5	2/3/10	Impacted face presentation	+	—	
6	11/16/10	Eclampsia	—	—	At end of seventh month.
7	12/21/10	Eclampsia	+	—	Ninth month of pregnancy.
8	4/9/12	Giant fetus; transverse position	—	—	Cause of death, septic peritonitis.

* In this column + stands for recovery; —, for death.
† In this column + stands for live birth; —, for dead birth.

admitted. She was seven months pregnant. She had no convulsions following the operation and became perfectly conscious within twenty-four hours; the urine increased in amount and it was thought she would recover. She developed pneumonia and died on the fifth day.

In reporting my operations, I have divided them into two classes: (1) operators at period of election; (2) miscellaneous.

In the first class there are seven cases without maternal or fetal mortality. The indication for operation was, in two cases, contracted pelvis of the rachitic dwarf, in three cases fibroid obstructing birth-canal, in one case transverse position in patient with ventrifixation of uterus, in one case, carcinoma of cervix. In the latter, carcinoma was diagnosed in the sixth month of gestation. At that time, the cervix was amputated by cautery. Pregnancy was uninterrupted and cesarean with complete extirpation of the uterus was performed at about the thirty-sixth week. Unfortunately, the baby died before leaving the hospital. But it is gratifying that the mother, after six years, has had no recurrence of malignant disease.

Cases 1, 2, 6 and 7 in the miscellaneous table have been referred to in the body of the paper. Cases 3 and 5, impacted face presentation. The patients were in labor for a considerable period of time, but I had every reason to believe that they were not infected. Both mothers recovered. One child was still-born.

Case 4 was one of rupture of uterus. Patient had been long in labor, and after prolonged use of forceps under anesthesia was in profound collapse when admitted to hospital. I administered normal saline solution intravenously in both arms and performed hysterectomy. The patient rallied nicely from shock but died of nephritis.

In Case 8 I was called to see the patient when she had been some time in labor. The arm protruded from cervix. An attempt at version had been made. After examination, that method of delivery seemed to me impossible. The abdomen was very large and completely overhung the vulva, patient reclining. The lower abdomen and external genitals were exceedingly edematous. The legs and feet greatly swollen and hard. A catheterized specimen of urine showed large amount of albumin. I considered the case practically hopeless. The abdomen was opened. The fetus was so tightly wedged in the transverse position that I was unable to correct the marked dextrotorsion until after the uterus was emptied. In an attempt to make the operation extraperitoneal, I attached the parietal peritoneum to the uterus, surrounding the proposed line of incision on all sides. A giant fetus was delivered, weighing thirteen pounds. The uterine and abdominal wounds were only partially closed and were drained with iodoform gauze. The patient did very well for several days. The albumin almost completely disappeared and the quantity of urine in twenty-four hours reached as high as 70 ounces. The patient died of septic peritonitis on the tenth day after operation. I feel sure that this patient would have recovered if she had been removed to the hospital and hysterectomy performed. As I have said, the best hospital facilities are not too good and I am convinced that a patient must be ill indeed, if we are not well repaid for the slight delay occasioned by her removal to a proper environment.

In conclusion, I would repeat that it should be the object of the obstetrician or physician in charge to make his diagnosis and arrive at an early decision as to future treatment, bearing in mind that the risk of the operation increases proportionately to the severity of previous manipulations. That the operation in itself is simple and harmless is the point that should be remembered in its application for the relief of such conditions as placenta prævia or eclampsia. The field of usefulness of cesarean section is enlarging; therefore, it is important that none of the stigma of high mortality, which attends the procedure in complicated cases, should attach to the operation done at a period of election. Hence, the above classification.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MILLER AND STILLWAGEN

DR. R. C. NORRIS, Philadelphia: I take it that nothing has been produced from modern obstetric procedures which is on such secure foundation as that when there are serious obstacles to labor the elective cesarean section is the operation of choice. We have been accepting the measurement of 7.5 cm. for the conjugate as the absolute indication for cesarean section, and some of those skilled in both abdominal and obstetric work are beginning to widen this indication to 8 cm. I know of no problem in obstetrics more difficult of solution. When we realize that 80 per cent. of patients with conjugates above 7.5 cm. are delivered spontaneously and that only 5 per cent. will require major obstetric procedures, we can understand that we cannot without a test of labor select elective cesarean section without some anxiety as to its real necessity. I am still old-fashioned enough to believe that with relative disproportion, with a conjugate between 9 and 10 cm., the induction of premature labor two or three weeks before term has a distinct field of usefulness. I should not think I did my duty to my clientele unless I employed this. When we say patients must have a test of labor it must be a *test* of labor. This means perhaps two hours of hard bearing-down pain. Anything short of this is not a test of labor. Considered from the standpoint of statistics, we know a real test of labor increases the dangers of cesarean section and of pubiotomy. It has been my experience that as the mechanism of labor goes on lateral flexion of the head increases and the sagittal suture will be brought nearer to the sacral promontory. If this is ever less than 1 inch forceps is always to be abandoned as a means of treatment. The crux of the matter is: Shall we do in these cases, which have been subjected to a test of labor, pubiotomy or cesarean section? Either operation on an exhausted patient is a bad surgical procedure. If we are prepared to believe that the mortality of cesarean section on exhausted patients is from 5 to 10 per cent., and that the mortality of pubiotomy in similar cases is less than one-half as great, with, however, a much greater mortality rate for the child, we shall be obliged to elect pubiotomy. I do not agree with Dr. Miller that 3 cm. is the maximum separation of the severed bones that should be permitted. In my cases it has been 5 or 6 cm., with no resulting harm to the bladder attachments or the sacro-iliac joints.

With the dangers of extensive laceration of the soft parts, pubiotomy means more than the skill of the abdominal surgeon. It means the additional skill of the obstetrician. I believe pubiotomy is justifiable after a prolonged test of labor carefully managed to guard against infection and exhaustion.

DR. E. E. MONTGOMERY, Philadelphia: In 1883 before the Philadelphia County Medical Society I read a paper in which I asked, "Is craniotomy on the living child justifiable?" and took the ground that it was not. The progress from that time to this has been very great. We no longer find, as was then shown by the investigation of Harris, that the woman delivered with the horn of a cow was attended with less mortality than the woman subjected to cesarean section by the surgeon. Cesarean section for placenta prævia was not even considered at the time of which I speak for the treatment of such cases. It has been shown by Pankow that in twenty-three cases in which cesarean section was done in which the placenta was attached between the body and the cervix there was no mortality, while under the ordinary treatment eight out of forty-nine terminated otherwise. Selected cases of eclampsia offer another field of usefulness for cesarean section. Blood-pressure and tension must be estimated, and the operation for best results must be resorted to prior to the occurrence of convulsions. In many of these cases vaginal cesarean section may be the method of choice, but if the pelvis is slightly contracted, if the woman comes to her first labor threatened with eclampsia,

with high arterial tension, the chances against both mother and child will be greatly reduced by the employment of cesarean section. That this operation under later methods of treatment and in proper cases is not such a grave procedure is shown by the work of such men as Boyd, who records twenty-seven cesarean sections with no maternal mortality and only one fetal death, and that not attributable to the operation. Cases are on record in which the operation has been performed on one woman five times with five living children and with four living children in another. The subject is one of importance, and if the investigator is careful to select his cases and to operate promptly, there is no question but that the mortality of mother and child will be greatly reduced.

DR. ROSS MCPHERSON, New York: We encounter in some cases a conjugate even longer than normal with much lateral contraction, and we must remember that cesarean section is at times indicated where the conjugate is longer than normal. When I read a paper on cesarean section before this Section some years ago, reporting 186 cases from the New York Lying-In Hospital, I gave as two of the indications, placenta prævia in certain cases, and eclampsia, and I almost caused a riot. I am glad that some of the other men feel the same way about it now. I have had eight cases of cesarean section in placenta prævia with no deaths of the mothers and two deaths of children, the one dying on the third day, the other one being still-born.

DR. E. G. ZINKE, Cincinnati: Since the completion of the doctrine of narrow pelvis and the new therapy thereof, the practice of obstetrics has virtually been revolutionized. But it will take a long time before the profession generally will be familiar with all the details of the new management of cases of narrow pelvis. I have advocated cesarean section for certain cases of placenta prævia for the last eleven years. But the pendulum has now swung too far to the other side. I do not endorse cesarean section for every case of placenta prævia. There are cases of placenta prævia which can be treated with perfect safety by other methods. Cesarean section for eclampsia should be considered only after other intelligent medical treatment has failed, and before the patient's vitality has been reduced. Veratrum viride, if properly administered, will stop the convulsions in the majority of cases. This all means that the practitioner who undertakes to deliver women should know obstetrics; that he should study his cases before the time of birth and determine, prior to the event of labor, whether the patient before him can be safely delivered at home or whether the hospital is to be preferred. There lies the crux of it all. It is a mistake to send patients to the hospital after they have been infected or injured by the introduction of the hand or the use of the forceps.

DR. HENRY SCHWARZ, St. Louis: None of the speakers has mentioned a very important means for finding out whether or not in a given case of first pregnancy the pelvis is sufficiently roomy for the passage of the fetus, independent of careful pelvimetry, which, of course, must be practiced in every case. It is well known that toward the end of a first pregnancy the presenting part descends into the pelvis, so that vaginal examination of primiparæ, when made about a week before term, reveals in over 90 per cent. of all cases the presence of the fetal head well down in the pelvis, and in these cases there will be no trouble so far as the pelvis is concerned, no matter what the pelvic measurements may be. On the other hand, whenever in a primipara the presenting part has failed to descend into the pelvis a week before term, there is likely to be trouble, even if the pelvic measurements are satisfactory; in such cases an exact antepartum diagnosis should be made, if necessary, with the aid of an anesthetic. Placenta prævia never forms a justifiable indication for cesarean section. Most cases of placenta prævia are handled by the general practitioner; he sees them away from medical centers and at all hours of the day and night. It would be discouraging to the practitioner if we were to make him feel that his cases of placenta prævia would be better off in the hands of the specialist in a hospital, where they could be delivered by cesarean section, instead of teaching him how to handle his cases safely and successfully with the means at his command. My pupils are trained to handle their cases of placenta prævia in out-of-the-way places by the same means which they see employed in our clinics, and we do not have a mortality of 4 per cent. in our cases.

DR. T. M. BURNS, Denver: In my paper last year criticism was made of my advocacy of cesarean section for eclampsia. I have done seven cesarean sections for eclampsia and have saved all the mothers and babies. I want to prophesy that in the future when we do cesarean section we will examine the appendix and the gall-bladder and operate on them also if necessary.

DR. C. S. BACON, Chicago: The examination in these cases must show us not only the size of the pelvis, but the shape; not only the length of the conjugate, but whether we have a normally shaped pelvis and whether the first and second vertebræ project so as to make a long inlet instead of a short inlet. It is interesting to note that the relative indication is gradually rising. Formerly it was 5.5 cm., then 6, then 7, and now it is 8. Seven cm. I believe is a limit that can well be adopted. The probability of spontaneous labor differs very much in these cases. I do not believe the probability is as great as given by Dr. Norris. We find from statistics that the possibility of spontaneous labor when the vera conjugata is from 9 to 10 cm. is 70 per cent; when from 8 to 9 cm., 40 per cent.; when from 7 to 8 cm., 10 per cent. The chances for spontaneous labor, then, can be taken in the two upper classes, but in the lower with considerable risk. The main question is, in all these cases, if we give up the thought of spontaneous labor, whether induction of labor is possible. It is not desirable in the lower groups. In case labor has begun and the patient is possibly infected, shall we choose cesarean section or hebosteotomy? I have no hesitation in agreeing with Dr. Norris that hebosteotomy is the safer of the two.

DR. M. M. LUCID, Cortland, N. Y.: In the presence of modern science, it would not be a sane conclusion that the self-appointed power of the physician is justifiable. To no physician, either legally or morally, is such a power granted. It is perfectly sane, however, to make the statement that in view of the advantages of modern surgery, a cesarean section offers the best possible chance of life for both mother and child. I offer the report of one case in which both mother and child are alive and well at the eighth month. I want to emphasize a point in my technic; that after making the incision in the abdomen and in the uterus, the sac should not be immediately opened, but that the hand should be passed around the sac, freeing the placenta, and the sac, child and placenta delivered simultaneously from the abdomen and the sac then opened immediately for resuscitation of the child.

DR. W. M. SPRIGG, Washington, D. C.: I want to report fifteen cases of consecutive cesarean section for dystocia, pelvic deformity, without a death and with only one death of the fetus and that due to the anesthetic. I do want to call attention to one point in the technic not mentioned and which in my hands has proved very satisfactory. That is the use of a rubber dam about 18 inches square with a small hole cut in it in the operation with partial delivery of the uterus. With the dam over the uterus separating it from the abdominal cavity, one can do the entire operation without having a particle of blood in the abdominal cavity.

DR. E. G. ZINKE, Cincinnati: It is very desirable to counteract the present infatuation to perform cesarean section in every case of eclampsia. The cases cited are not proof of the value of cesarean section in the treatment of puerperal convulsions. When I was a mere tyro in the practice of obstetrics I saw nine eclamptic patients recover without operative intervention. Both mother and child lived in every case. There are many among us who can report similar results.

DR. HAROLD A. MILLER, Pittsburgh: While it is a matter of great importance to secure all possible information regarding the size and shape of the pelvis, still, in borderline cases, other things, such as the size of the child, position, presentation, amount of molding and effectiveness of pains, may be the determining elements in electing a cesarean in preference to high forceps. I agree with Dr. Norris that pubictomy has a field which is limited to those cases in which a very small amount of increase will permit of delivering a living child.

The expression should go out from this body that we should never be content with pulling a dead child out of a mother, but that we must give to that mother the benefit she is entitled to expect. What we want to do is to handle these cases largely by the result of abdominal palpation by which we determine whether the head is still floating above the superior strait. If a major operation is to be done the patient should be sent to the proper place for its performance. Do not touch the patient and kill the child and then refer the patient to some place after infection. We should never forget that the best pelvic measurement is the fetal head. The only thing we are interested in is whether or not that fetal head can pass through the birth-canal. For that reason it is best if possible to give all women the test of labor. I refer to a test that would compare to the average first stage of labor, not to a certain amount of dilatation of the os. If the head at that time has made no progress I would say that the case had better be treated by cesarean section.

DR. C. A. STILLWAGEN, Pittsburgh: In regard to Dr. Sprigg's suggestion concerning the use of the rubber dam, I may say that it is the custom of most operators not to deliver the uterus from the abdominal cavity. If, however, the operator chooses to bring the uterus out through the abdominal incision the use of the rubber dam is an excellent procedure.

INDUSTRIAL LEAD-POISONING IN THE LIGHT OF RECENT STUDIES

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Industrial lead-poisoning is a disease with which the ordinary practitioner has little familiarity. Occasionally, a case may come to him and be recognized as such, provided the occupation of the patient is one in which the danger of plumbism is notorious or there are unmistakable symptoms, such as a well-developed radial palsy.

Yet we know that plumbism is a disease fairly common in industrial centers in other countries, and that it not only causes permanent disability or death, but also decidedly influences the course of other diseases. Its importance, then, is undeniable, and the reason why it has escaped careful study in our country is hard to find.

PREVALENCE OF INDUSTRIAL PLUMBISM IN THE UNITED STATES

It is commonly supposed that the amount of lead-poisoning in the United States is negligible as compared with that found in the older countries, and that this comparative immunity comes from our superior methods of manufacture, the excellent construction of our factories, and the better health of our working classes, which last rests in turn on higher wages and better housing and food. Unfortunately for our national pride, none of these assumptions will stand investigation. There is more, not less, lead-poisoning in certain lead trades if not in all lead trades in the United States than in the corresponding trades in Germany and Great Britain.

In order to make a comparison between the proportion of men leaded in the United States and in Great Britain or Germany, we must turn to certain trades which have been studied intensively. Such a comparison can be made in the white lead industry and in some branches of the pottery trade. In an English white and red lead factory employing ninety men, there was not one case of lead-poisoning in five successive years. In an American white and red lead factory, employing eighty-five men, the doctor's records for six months showed thirty-five men leaded. Another English factory employs 182 men and did not have a case of lead-poisoning last year. An American factory with 170 men had sixty poisoned during this same year.

The pottery trade in certain branches is well organized, and the union records give more accurate information as to diseases than can be obtained in any other way. Through the courtesy of a secretary of a local dippers' union I am able to give the number of men who suffered attacks of plumbism during the year ending April, 1911. Out of a local of eighty-five dippers, thirteen men had had sixteen attacks of lead-poisoning. The English factory inspection report for 1910 states that in the Staffordshire potteries among 786 male dippers, there were thirteen cases of lead-poisoning, exactly the same number as among our eighty-five dippers. In other words, in Staffordshire one dipper in sixty or sixty-one suffered from acute plumbism during one year; in Ohio one dipper to six or seven.

It certainly needs no further demonstration to prove that industrial lead-poisoning is frequent enough in our country to constitute a serious problem.

LEAD COMPOUNDS USED IN INDUSTRY

Many authors in treating of the comparative toxicity of the different salts of lead have assumed that this depends on their solubility in water or in dilute hydrochloric acid, but experiments on animals have proved that the conclusions, based on tests of solubility in dilute hydrochloric acid *in vitro*, are misleading and do not show what takes place in the stomach. Thus Rambousek, Blum and E. Leymann showed that the sulphate and chromate are both of them soluble in the gastric juice, and can cause severe lead-poisoning in animals, while the sulphid is apparently harmless. Rambousek's experiments showed that the solution of metallic lead and of white lead is helped by the presence of 1 per cent. peptone. A more accurate classification, therefore, of the poisonous lead salts is that of Leymann, who bases it on their solubility in gastric juice, although he adds that, other things being equal, a salt is poisonous in direct proportion to its dustiness.

Of late more and more stress has been laid on this factor of dustiness and other physical properties. Thus the English experts believe that a less soluble lead salt may be actually more dangerous than one which is more soluble, but less easily powdered. For instance, lead acetate is very soluble, but it has a disagreeable taste, so that the workman cannot swallow it unawares, and it is sticky, not powdery, so that in handling it he is not exposed to dust-laden air. On the other hand, the oxids, the basic carbonate, the chromate, sulphate and monosilicate are all dusty and some of them very light and fluffy. They are also almost tasteless, and the workman who handles them dry breathes into his mouth and swallows quantities without noticing it. Therefore, the English authorities—Oliver, Goadby and Legge—regard the lead salts as dangerous in proportion to their dustiness. They concentrate their efforts on the abolition of dust and with amazing practical success.

The worst of the lead compounds is probably Pb_2O, the suboxid, which forms on the surface of melted lead, and is given off in fumes at higher temperature (Saeger). It is this oxid which causes poisoning in lead smelters, zinc smelters, brass molders, workers in the typographic trades, and the men employed in making lead pipe and wire, sheet lead, solder, shot and all the multitude of articles made from metallic lead. Men who handle these objects after they are made may also become poisoned, because the oxids forming on the surface of the lead rub off on their hands.

The second place would be assigned by some to the higher oxids PbO (litharge) and Pb_3O_4, or Pb_4O_5 (red

lead), or by others to the basic carbonate, white lead. The latter is decidedly more soluble and dose for dose more poisonous, but it is not so light and fluffy as are the oxids, and therefore Etz places it lower in the scale of industrial poisons. White lead, classed as the most dangerous of all by Lehmann, is the best-known of the lead salts and probably responsible for more industrial plumbism than any, for it is white lead that poisons the majority of painters, and it is white lead that is used in the potteries and manufactured in white-lead works. The oxids, litharge and red lead are used by makers of storage batteries; they enter into the composition of rubber, glass, varnish, certain kinds of pottery glaze, the enamel used on sanitary ware and the paint used to cover iron and steel. A few months ago there was an outbreak of lead-poisoning in the Brooklyn Navy Yard involving twenty men who had been set to chipping off old paint from the sides of steel ships.

My own experience would lead me to believe that the oxids are more dangerous than white lead. In two factories in which the medical records of white-lead men and oxid men are kept separate, the rate of poisoning is higher in the oxid department, and the average period of employment is shorter. For instance: in one of these there were fourteen cases of lead-poisoning among sixty-five men employed in the white lead department, or 22.5 per cent., and seven cases in the oxid department among twelve men, or 58.3 per cent. The average period of employment was four years for the white-lead men and one year for the red-lead men.

Lead sulphate is beginning to be an important substance in American industry, though it has not as yet gained much footing in other countries. It is to a great extent displacing white lead in the rubber industry, and is even entering, usually as an adulterant, into the composition of mixed paints. It is also produced in large quantities in smelting the sulphur-containing lead ores, and, mixed with the suboxid, is the cause of lead-poisoning in smelters. For a long time lead sulphate was held to be almost, if not quite, harmless, for it is insoluble in water and very sparingly soluble in dilute acids. Indeed, even now many physicians in our country advocate the giving of a weak sulphuric acid drink to workmen in the lead trades, under the impression that the formation of the sulphate will render the ingested lead harmless.

Rambousek's and Blum's animal experiments have shown that there is only one insoluble and therefore harmless lead salt—the sulphid—and that the gastric juice, probably with the help of peptone, dissolves lead sulphate comparatively quickly. Goadby, experimenting *in vitro* with gastric juice, found that it was even more soluble than the basic carbonate or than litharge, and Sommerfeld states that the bronchial mucosa renders soluble lead sulphate which has been breathed in.

AMOUNT OF LEAD REQUIRED TO PRODUCE TOXIC SYMPTOMS

It is impossible to say how large a daily dose of any of the lead salts is required to produce symptoms of lead-poisoning, and we are not, of course, concerned here with the question of a single toxic dose. Brouardel states that the daily ingestion of 1 mg. is enough to cause poisoning. Arnold Gautier puts it much higher, 8 to 20 mg. daily. Others, as Hauck, insist that the amount ingested must be much larger than this. All these observations are of slight value, because in lead-poisoning individual susceptibility plays so very large a part.

PREDISPOSING FACTORS

1. Individual Idiosyncrasy.—The most superficial study of cases of plumbism is enough to show the great influence of individual susceptibility; indeed, every foreman and every workman knows that there are men who can hardly stand any exposure to lead, while others can handle it for years with impunity. I have never been in a factory so bad that the employer could not produce at least one or two old workmen who had breathed and swallowed lead compounds for from twenty-five to forty years, and yet remained apparently healthy. For instance: in one white lead factory I found the record of a man who had begun to feel symptoms of lead-poisoning at the end of two weeks' time, and who died of acute plumbism after five and a half months' work. In the same factory I talked to a man who had worked in clouds of white-lead dust for thirty-two years, ever since he was a boy of 12, and had felt no ill effects.

Hirt, who had long experience in industrial lead-poisoning, says that 20 per cent. to 30 per cent. of all leadworkers are not susceptible. Of the remaining 70 per cent. to 80 per cent., something over one-half (about 40 per cent. of the whole number) sicken quickly, the others more slowly. The few accurate figures I have been able to obtain on this point seem to indicate a greater susceptibility than that observed by Hirt on the part of American workmen, for the proportion escaping is smaller than Hirt's. In two very dangerous factories, where every employee was examined by a physician at least once a fortnight, 35 per cent. of all the men in one and 28 per cent. in the other were found suffering from the effects of the lead; 52 per cent. and 40 per cent. of all who had been employed as long as one year had lead-poisoning. Only 10 per cent. in one and 12 per cent. in the other had worked for more than eight years and had never been poisoned.

2. Family and Race Idiosyncrasy.—An oversusceptibility to lead-poisoning is found by Oliver to be characteristic of certain families, and he asserts that the son of a lead-poisoned father or mother should never go into a lead trade. Whether race has anything to do with it is a question. There is a general impression that negroes are more susceptible than white men. Edsall quotes Monell, an expert lead-smelter, as saying that negroes are specially prone to lead convulsions, and Edsall finds that of six cases of negroes who were in Philadelphia hospitals for lead-poisoning, three were encephalopathies. I have studied but one lead trade in which negroes are employed, the white-lead industry, and my figures are too small to be of any real significance. I give them only as tending to confirm Edsall's view. In the white-lead factories studied 1,600 men make up the pay-rolls. About 250 of these are negroes, or 15 per cent. Among nine cases of encephalopathy which were reported to me in this industry, four were in negroes, or 44 per cent.

3. Influence of Sex.—Sex is recognized as a factor in susceptibility, even by legislators. Not only are women said to be more susceptible than men, but the disease is more apt to assume the severer forms in women. Oliver states that there were, in 1897, 328 men employed in the white-lead works in Newcastle-on-Tyne and 571 women. The cases reported during six months of that year were nineteen men, or one for every seventeen employed, and sixty-six women, or one for every eight or nine employed—just about double. The factory inspector's report for 1910 shows that in the Staffordshire potteries the incidence of plumbism was twice as great among the female dippers as among the male.

The only trade in which I have been able to study the relative susceptibility of men and women to lead-poisoning is the pottery industry.

At first sight it would seem that my figures bear out the statement that women are more susceptible to lead-poisoning than men, for there were in 1911 fifty-seven cases among 400 women, or one to seven, and only eighty-seven among 1,100 men, or one to twelve or thirteen. But a closer analysis shows that there are factors influencing this difference other than the factor of sex. In East Liverpool and Trenton the relative proportion of male and female cases more than bears out the English theory. Seven hundred and ninety-five men had thirty-nine cases, or one to every twenty or twenty-one, and 150 women had twenty-nine cases, or one to every five or six employed.[1] These are the districts in which white ware is made and the National Brotherhood of Operative Potters holds sway, and the women have many handicaps as compared with the men, besides that of sex idiosyncrasy. They are unorganized, underpaid, poorly housed, poorly fed, subject to the worry and strain of supporting dependents on low wages, while the men are organized, prosperous and independent. In the unorganized pottery fields, however, in the tile works and art potteries of the Zanesville district, men and women are in the same economic class, all making low wages with everything that that implies, and here we find no such disproportion between the two sexes in the matter of lead-poisoning. In these potteries there were, in 1911, 304 men employed and forty-eight cases of lead-poisoning, or one for every six or seven men; 243 women were employed and there were twenty-eight cases found, or one for every eight or nine.

In discussing the relative frequency of lead-poisoning among men and women, several physicians told me that they saw more male cases than female. Two of them, Dr. Bainter and Dr. Sellers of Zanesville, said that while they saw more men with the typical gastric form of lead-poisoning, they saw large numbers of women and young girls with less pronounced and characteristic symptoms, which they, however, attributed to the lead, such as profound anemia with constipation and sometimes amenorrhea. Now, it is more than probable that many such cases were not reported to me, for the majority of physicians hesitate to speak of lead-poisoning if there is no colic. The British reports, however, include cases of "anemia of adolescence, aggravated by employment." Certainly it is probable that this is one reason for the discrepancy between my results and theirs as regards female cases.

4. Influence of Alcohol.—Alcohol is recognized universally as the most important factor in predisposing to lead-poisoning, although it has never been pointed out that, if this be true, the oversusceptibility to lead of women, the comparatively temperate sex, must be even greater than we have supposed. Pieraccini insists that alcohol and lead work together, forming a vicious circle, for as alcohol renders a man more susceptible to plumbism, so plumbism in its turn makes him more susceptible to the action of alcohol. I have found that lead-poisoning in its early stages may drive to intemperate living a man who up to that time had been sober, because the peculiarly disagreeable, sweetish taste so persistent in lead-poisoning yields better to beer and whisky than to tea or coffee or milk. I have talked with men who told me quite seriously that this fact proved that the beer cut the lead and carried it off, and that they always advised new men to drink beer. Later on, when appetite is quite gone and there is a loathing for solid food, the men bring home their lunches untasted and depend on beer almost entirely. Girls seem to take to very sour pickles and strong tea to get rid of this detested sweet taste.

5. Influence of Fatigue, Living Conditions, Etc.—Rambousek says that a strong man, poorly nourished and housed, is in greater danger of lead-poisoning than a weak man well housed and fed. In our country there is distinctly more lead-poisoning among the non-union potters in the Zanesville district, working for $1.25 to $1.65 a day, than among the union potters of East Liverpool or Trenton, working for $2.50 to $5 a day. Thus, in Zanesville, among 304 men employed, forty-eight cases were found, or one for every six or seven men employed. In East Liverpool, among 785 men, thirty-nine cases were found, or one for every twenty or twenty-one employed. It must be remembered that the union records are fairly full, and it was much easier to trace the cases in East Liverpool, so the contrast would probably be even greater if the full truth were known, but it must also be remembered that much of the glaze used in Zanesville is stronger in white lead than that used in East Liverpool.

6. Influence of Season.—It is generally held that there is more lead-poisoning in summer than in winter, and the reason usually assigned is the greater absorbent power of the skin in summer and the greater thirst, leading to alcoholic excess. The generally increased susceptibility to gastric disorders during the summer months is also pointed to as influencing the development of lead-poisoning. I have not been able to convince myself that there is relatively more lead-poisoning during summer in the trades I have studied, but that there is actually more is probably true, because there is more work done in these trades in summer. This is the season of activity in the building trades, which means an increased number of painters, of bath-tub enamelers, of sanitary ware glazers and of tile workers, and therefore, also, an increased demand for white and red lead.

LENGTH OF EXPOSURE NECESSARY

The length of time a man may be exposed to the action of lead before he develops symptoms of poisoning is a question of practical importance, because many foremen and some employers hold that the best way of protecting their men against industrial plumbism is to employ them for short periods, a few weeks, or perhaps three months. Such men naturally do little else to protect their employees. One can hardly expect a foreman to show much solicitude for a gang of Poles or Italians whom he expects to lose in a few weeks' time. Now, if it could be shown that there is a period during which a man can be employed without risk, there might be something to say for this view, but this is not true. It depends on the quantity of dust to which the man is exposed and his individual susceptibility. Tanquerel reports a case of a man who developed palsy at the end of one week's work in white lead. Sabbatini has seen colic during the first week of employment in white lead. I found a white-lead worker employed in an extremely dusty, neglected factory who went to the hospital with both colic and neuritis at the end of three days' employment. My figures for length of exposure in this trade cover 120 cases; eight of the patients sickened in less than two weeks' time; thirty-six in less than a month; eighty-nine in less than a year. Only thirty-one of the 120 had worked as long as a year. The enameling of bath-tubs is done with a powder composed of silicates, borates and oxid of lead, which is fused and then ground and applied dry. The proportion of lead oxid is from 6 to 20 per cent. As some of it has by fusion been changed to the insoluble disilicate, the powder contains usually not over 6 to 7 per

1. "Employed" means employed in work involving exposure to lead.

cent. soluble lead. In this trade the average length of exposure is much longer than in the white-lead industry. One only of sixty-four enamelers was poisoned in less than a week's time; two in less than a month; nineteen in less than a year, and forty-two had worked more than a year. But among the mixers and grinders of the enamel the period of exposure was much shorter. Thirty-four averaged a little over six months' employment.

Cases of unusual susceptibility to lead which have come into my hands in other trades are the following: A Pole, who worked in a comparatively safe lead trade, making lead stoppers and strainers for wash-stands and who had colic at the end of a week. A painter, working indoors, and sandpapering dry paint, fell in convulsions at the end of nine weeks, was unconscious for three days and incapacitated for three months. A lead-smelter had double wrist-drop and partial paralysis of both legs, for which he was treated four months in the hospital, without any improvement. He had been at work only eight weeks.

MODE OF ENTRANCE OF LEAD SALTS

This is a question not only of scientific interest, but of great practical importance. Obviously, the whole sanitary control of the industry depends on whether we decide that the skin, the intestinal tract or the respiratory tract is the sole or the most important port of entry.

That lead is absorbed through the skin, especially in hot weather, is held to be true by many authorities, though some attribute much more importance to this mode of poisoning than do others. Pieraccini and Guidelli in Italy, Roth and Sommerfeld in Germany, Manning in England and Edsall in this country think that the skin plays an appreciable part in the absorption of lead, especially in the summer, when the combination of lead with the fatty acids of the skin takes place rapidly. Leymann finds no proof for such statements, and though he cannot as yet deny the possibility of some absorption of non-water soluble compounds through the skin, he doubts that actual poisoning ever takes place in this way, and considers skin absorption of no practical importance in industrial lead-poisoning. My own observations tend to make me think that the skin, if it acts at all as an absorbent, does so to a very slight extent. In England, under the leadership of Oliver, Legge and Goadby, skin absorption is practically ignored, and the efforts of the government inspectors are directed toward the abolition of dust and measures to prevent the lead being carried into the mouth. In the summer of 1910 I visited three white-lead factories in England and saw men smeared with white lead up to their shoulders, and this in summer weather. Yet in the whole district of Newcastle-on-Tyne, where 1,320 are employed, there were but five cases of lead-poisoning during 1910.

We might compare in our country the incidence of lead-poisoning among pottery dippers, who work with their hands plunged in a liquid glaze up to their shoulders, the glaze containing some 10 to 20 per cent. of unchanged white lead, with the incidence of lead-poisoning among bath-tub enamelers, who shake dry enamel over the tubs, the enamel containing a much smaller percentage of soluble lead.

Among eighty-six dippers there were thirteen cases of lead-poisoning, or one to every six or seven.

Among 148 enamelers, fifty-eight cases of lead-poisoning were found, or one to every two and one-half employed.

Certainly, if skin absorption were an important element, it should result in more poisoning among the dippers than among the enamelers.

The intestinal tract is, of course, admitted by all as the most important portal of entry, and some believe that it is only through the mouth and intestines that poisoning ever occurs. These men recognize that lead may enter through the inhalation of dust, but insist that here, too, it is a case of intestinal absorption, the lead, which has been breathed in, being swallowed with the saliva. Others of the German observers, as Leymann, Etz, T. Weyl and Wutzdorff, admit the possibility of direct absorption of lead compounds from the respiratory mucosa, and Weyl even believes that lead may penetrate the lung capillaries and reach the blood-stream. This last statement has been experimentally proved by Goadby, who kept cats in an atmosphere of flue dust (lead suboxid), red-lead and white-lead dust, at the same time preventing them from licking their fur. All lost weight and appetite, and suffered from constipation, colic, weakness of the muscles of the back and the extensors of the legs, and retinal hemorrhages. Lead could be demonstrated in the walls of the capillaries of the lungs. Goadby also states that lead will be found deposited in the mediastinal glands, whether it is administered with food, or by inhalation, or subcutaneously.

Many striking instances can be given of the effect of dust inhalation in the production of industrial plumbism. Teleky says that in a large factory in which 80 tons of white lead were used in indoor work annually, 163 cases of lead-poisoning developed among the indoor workmen, while among the outdoor workmen who handled almost three times as much (237 tons) there were only fifty cases. It is hard for me to choose illustrative instances from my own experience, because all the lead trades I have studied are in our country extremely dusty trades. Perhaps my statistics of lead-poisoning among painters, gathered from hospital records, would be as illuminating as any. I have a list of 100 painters with plumbism who averaged twenty years in the trade, but among these are eleven who served less than one year. All these eleven had been doing indoor work with sandpapering.

DIAGNOSIS OF LEAD-POISONING

Of great practical importance is the diagnosis of lead-poisoning, and in the search for some one sure diagnostic sign many procedures have been suggested which have for a while seemed to fill the want, only to prove unsatisfactory in the hands of some observers. DuMoulin, working on the theory that lead is excreted through the skin, urged the application of sulphid to the skin when, if the patient were suffering from lead absorption, a black precipitate would form, and this even after all the adherent lead had been removed by rigid cleansing. Miura, however, proved beyond refutation that the test would succeed only on those parts of the skin which had been exposed to lead, and would fail on the surfaces which had been covered with clothing. The DuMoulin procedure is advocated now only in cases in which the workman does not know what he has been handling and it is necessary to determine whether he has been exposed to lead. Roth in Germany, Agasse, Lafonte and Heim in France, and most English observers, especially Oliver and Bedson, maintain that lead is constantly present in the urine in plumbism, and place great value on its detection as a help in diagnosis. Pieraccini does not believe that kidney elimination is of any importance. Rambousek attributes little importance to the kidneys in the excretion of lead; von Jaksch does not find lead at all in the urine in the late stages of chronic plumbism,

though he believes that it is always present in the early stages and during an acute attack. Blum agrees with von Jaksch that lead is excreted by the kidneys only when the system is saturated with it, and even then it may not occur, for in some of Blum's animal experiments none was found.

The basophilic granulation of the red blood-cells, described fully first by Grawitz, has been more generally accepted as an unfailing aid in diagnosis. Indeed, at the International Congress of Industrial Hygiene in Milan, this was declared to be an absolutely trustworthy sign of lead-poisoning, but at the next congress, held in Brussels in 1910, opinions had changed, and we find Biondi calling it a good positive but a bad negative sign, and saying that the presence of granules simply indicates young red blood-corpuscles, and may be found one hour and absent the next, depending on the activity of the blood-forming tissues. P. Schmidt, on the ground of repeated observations, says that a small number of granular cells cannot be regarded as significant. There must be at least 100 out of 1,000,000 red cells, better 300 to 3,000, and even then carcinoma, malaria, chronic intestinal hemorrhage, must be ruled out, as well as leukemia and pernicious anemia. Oliver denies all diagnostic value to the presence of granules in the blood, for he has failed to find them in 40 per cent. of his cases. Rambousek examined the blood of lead-poisoned animals, and says that basophilia is neither a specific nor an early sign of plumbism, for he found it only once in seven animals.

The diagnosis of lead-poisoning must therefore rest on many, not on any one element, and I should like to add my voice to those that urge especially the importance of the anamnesis, the description of the patient's occupation. Increasing loss of strength, vague digestive disturbances, headache, loss of appetite, may mean nothing in an ordinary man; they are symptoms of great significance in a lead-worker, and if the physician makes no inquiry as to the man's occupation or, on ascertaining it, does not recognize it as involving exposure to lead, he will inevitably fail in his diagnosis in the early stages of this disease. The importance of inquiring minutely into the occupation is insisted on by every writer of note on this subject, and it is suggested that DuMoulin's skin test be used in cases in which there is reason to suspect exposure to lead.

Weyl gives the following symptom-complex as characteristic of an early stage of lead-poisoning and sufficient when occurring in a lead-worker to establish a diagnosis, even in the absence of a lead line: "Pallor, disproportionate to the grade of anemia, foul breath, caries of the teeth, bad taste in the mouth, especially on getting up in the morning, loss of appetite, digestive disturbances of various kinds, intermittent attacks of weakness and trembling, which may make fine work impossible for the time, spots before the eyes, itching of the eyelids." Such a man hardly considers himself sick, yet he is already poisoned.

After interviews with several hundred lead-poisoned persons, I should wish to lay particular stress on the sense of increasing loss of strength and on the distaste for breakfast, as the very earliest symptoms noticed by the majority of these people. In the absence of any signs of tuberculosis a complaint of increasing weakness on the part of a laborer should always lead to a careful inquiry into his occupation.

The diagnosis of chronic lead-poisoning is missed by the usual practitioner, even more often than the acute, for he is usually content to determine the existence of chronic gastric disturbances, contracted kidney, arteriosclerosis with cardiac involvement, and unless a typical palsy supervenes the underlying cause is often not sought for. Yet industrial lead-poisoning is, according to Weyl, predominantly a chronic process and exceptionally an acute.

HOW SERIOUS IS ACUTE PLUMBISM?

It is a question of great practical importance whether or not the lesions of acute plumbism are lasting. I have found that most foremen and managers and many physicians hold that one, or perhaps two, or even three, attacks of colic may be endured without risk of permanent injury to the organs. It is the exceptional physician who looks on every sign of lead absorption as a serious matter.

We have a great deal of evidence that lead once absorbed may remain latent in the system for long periods and then again make itself felt. There is Oliver's famous case, a woman who had been severely poisoned in youth, who had left work and for seventeen years been free from symptoms of poisoning, but who developed symptoms of cerebral saturnism. Pieraccini says the symptoms of lead-poisoning may develop first after a man has left lead work for some months, and Tanquerel reported the case of a man who had repeated attacks after several years' absence from such work. Bernhardt had a patient in whom symptoms of paralysis came on twenty years after exposure to lead. All authorities insist that one attack of lead-poisoning predisposes to another, and urge that a man who has once been leaded be refused work in a place where he will be exposed to the lead again. Practically, this is hard to enforce in a skilled and well-paid industry. Potters, Scotch hearth-smelters, painters, hollow-ware enamelers, will cling to their trade in spite of suffering and loss of health. I have the histories of sixty-six enamelers who averaged between three and four attacks of poisoning.

Pieraccini believes that it is not possible to say positively that an attack of acute lead-poisoning may be completely recovered from, for it is more than probable that some permanent change has been set up in the parenchyma of the liver and perhaps of other organs, a connective tissue growth which tends to be progressive.

CONCLUSION

In conclusion, I should like to say a few words as to the situation at present in the lead trades in the United States. Some of these trades grow less dangerous as time goes on. The increasing use of cheap substitutes for white lead, such as zinc oxid, barytes, and lead sulphate, and of the German para-reds or graphite for red lead may be bad for the product, but is very good for the workman. Anilin dyes are displacing chrome yellow and green. In lead-smelting there is a slow progress away from the dangerous and fortunately wasteful open hearth to more economical and safer methods of extraction, and in the white- and red-lead industry there is an increased introduction of machinery in place of hand work. The plumber is becoming more and more an iron and brass worker. On the other hand, certain dangerous lead industries are on the increase, for the demand for storage batteries, for enameled sanitary ware and for glazed tiles grows daily. Young girls are tending now to displace men in all industries, and there are no laws to prohibit their employment in the lead trades. Owing to the lack of legislation prescribing special precautions in the poisonous trades, industrial plumbism is not only frequent with us, but in many trades it assumes very serious forms. At the beginning of this article I gave some contrasting figures to show the prevalence of indus-

trial lead-poisoning in this country in comparison with countries where there is proper legislative regulation of the dangerous trades. This contrast was brought vividly home to me by a description which I found in T. Weyl's "Handbuch der Arbeiter Krankheiten." He is drawing what he considers a shocking picture of lead-poisoning as it used to be found years ago. He says:

> Lead tabes is the severest form of lead cachexia, now almost never seen, thanks to prophylactic measures. Here we find more or less all the phenomena of plumbism in one individual. Pallor like that of chlorosis, a predominance of the flexors over the extensors, as shown in the hanging head, the bowed shoulder, the hands held in pronation; muscular tremors, causing a shambling gait and trembling movements of all the muscles of the body; disappearance of all possible fat; general emaciation.

From my studies so far I can unfortunately testify to the fact that, thanks to the lack of prophylactic measures, Weyl's lead tabes is far from being a rare condition in our country; that instances of it can be found in every town where there are lead industries of a dangerous character, and that it is not even a vanishing condition, for new instances of lead tabes are being added to the number every year.

Surely there is every reason why we should devote to this disease the same intelligence and energy that we devote to other preventable diseases. There are many problems waiting solution. We need research into the question of sex susceptibility, of race susceptibility, of the influence of summer heat, of the influence of muscular fatigue; we need, above all, research into the different lead trades of our country and the different forms of lead-poisoning that they produce, the localization of palsies, the frequency of encephalopathies. As it is now, it would be hard to point to any disease equally prevalent, equally serious, equally controllable, which has been so neglected by the medical profession in America as industrial lead-poisoning.

EPIDEMIC POLIOMYELITIS IN NORWAY

ITS ETIOLOGY AND THE POSSIBILITIES OF ITS PREVENTION

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I. HISTORY

Acute poliomyelitis has been recognized in Norway as a distinct disease ever since 1820. Cases were exhibited in the Medical Society of Christiania in 1842 and in 1853. In 1863, discussing the case from 1853, Voss pointed out that, judging from the resulting paralysis, the disease must have its seat in the spinal cord or in the anterior nerve-roots.

The first epidemic of acute poliomyelitis broke out in 1868 in Dr. A. Christian Bull's district and was reported by him to the medical board of the state. This epidemic lasted from June to August. Fourteen persons were stricken, of whom twelve were children, with five deaths. The symptoms were so characteristic that any doubt of the nature of the disease can be excluded. Bull also reported two abortive cases — those of two children who were attacked by brief fever and indistinct paresis. The possibility of a contagious virus as the cause of the disease was discussed.

In 1886, Dr. Oxholm described an epidemic in his district; it also prevailed during the months of July and August. Nine persons were attacked. In the eighties several new cases were reported to the state medical board; these cases were regarded partly as cerebrospinal meningitis. In 1898, Bülow-Hanson and Harbitz[1] reported three cases of acute poliomyelitis; two of the patients died, while the third, who had the abortive form, recovered. The anatomic study gave the now well-known result: acute, diffuse infiltration of the spinal cord and its membranes and of the medulla and pons. Based on the anatomic conditions, the theory was advanced that acute poliomyelitis was an acute infectious disease and that the infection entered the system through the alimentary tract and throat.

In 1889, another epidemic broke out in a country district (Bratsberg) during the months of July to October. There were fifty-four cases, mostly in children. This epidemic was thoroughly studied and described by C. B. Leegaard[2] who pointed out that the epidemic spread along the main roads of communication, branching out to the sides with small groups of cases. The invasion of the infection was supposed to occur through the alimentary tract, and the disease was pronounced contagious with a short period of incubation, hardly more than twenty-four hours. Leegaard proposed that the disease be subjected to public control and be made reportable; he also proposed isolation for three weeks and subsequent disinfection. Professor Johannesen,[3] in 1911, published a synopsis of twenty-three cases of infirmities resulting from acute poliomyelitis, observed at the pediatric clinic during the years 1893-1899.

In 1903 and 1904, new, small epidemics occurred but, in 1905 and 1906, the disease broke out simultaneously in different and large tracts of the country. In 1905, 952 cases were reported of which 358 were of the abortive type.

The state physician for epidemic diseases, Dr. Geirsvold, gave a preliminary report of the epidemic of 1905; he maintained that acute poliomyelitis was a specific infectious and contagious disease. He further pointed out that great stress should be laid on the abortive cases and that the disease often was disseminated through the medium of healthy persons. The disease left immunity; stricken districts were the next year exempt from its ravages. It would spread from place to place, in the beginning often with influenza-like symptoms, later on developing into characteristic poliomyelitis, now and then accompanied by meningitis, abortive forms, Landry's paralysis, etc.

Geirsvold also called attention to the fact that exposure to cold and damp weather with subsequent catarrhal conditions or physical overexertion would predispose to the disease. He pronounced acute poliomyelitis infectious, with its point of invasion as a rule through the throat; the time of incubation, three to five days. At the time of the epidemics he had not observed similar diseases among the domestic or other animals. This short article by Dr. Geirsvold on the epidemic of 1905 contains in brief the main features of what has been observed during the different subsequent epidemics. In 1906, there were 466 cases with fifty deaths.

Francis Harbitz and Olaf Scheel,[4] in 1907, presented a review of the epidemic in Norway in the years 1903-1906, inclusive. They communicated the results of the

1. Bülow-Hanson and Harbitz: Beitr. z. pathol. Anat. u. allgem. Pathol. (Ziegler's), 1899, xxvi, 517.
2. Leegaard, C. B.: Epidemisk poliomyelitis; Bakteriologiske undersögelser, Norsk Mag. f. Lægevidensk., 1901, lxii, 377.
3. "Festschrift" in Honor of Abraham Jacobi, 1900.
4. Harbitz and Scheel: Epidemic Acute Poliomyelitis in Norway in the Years 1903-1906, THE JOURNAL A. M. A., Oct. 26, 1907, p. 1420.

careful anatomic examinations of nineteen cases. Of the patients, thirteen, most of them children, died during the acute stage of the disease. Harbitz and Scheel demonstrated a diffuse inflammation of the spinal piaarachnoid, of the gray matter of the spinal cord and the medulla oblongata and the surface of the brain. They again pronounced the disease to be specific, infectious and contagious, and entirely different from epidemic cerebrospinal meningitis, because it occurs at a different season, and because the virus occurs in the cerebrospinal fluid and membranes whence the cord and medulla probably are infected; further, that the infection enters the system through the digestive apparatus (the nose and alimentary tract) and that the central nervous system is infected either by way of the lymph-vessels, along the nerve-tracts, or still more plausibly through the blood. Cases of neuritis or transverse myelitis were not observed in connection with the examinations.

Leegaard, in a more extensive work,[5] has thoroughly described the epidemic of 1905. Here also the majority of patients were children; 50 per cent. of the cases occurred in August and September, 25 per cent. in July and October, and the remainder were distributed over the other months. In the genuine poliomyelitis cases 14.5 per cent. of the patients died and 58.5 per cent. became invalids. The disease this time also was disseminated along the main road of communication, along the coast by way of steamers, in through the country by the railroads. The disease was contagious, especially during the first three days but also the following three weeks. The time of incubation was found to be from two to three days as a rule. The contagion was carried from person to person and also through the intermediary of healthy persons (infection carriers) and its mode of entrance was found as a rule to be through the nose and throat.

During the four years following, the disease was on the retreat: in 1907, 204 cases with 15.2 per cent. mortality, in 1908, fifty-nine; in 1909, fifty-one, and in 1910, thirty-two cases. Real epidemics did not occur; only sporadic cases or small endemics. In 1911, however, the disease broke out with about 1,250 cases with about 10 per cent. mortality. Most cases occurred in July, August and September.[6] The disease this time also was characterized by its wide dissemination, apparently without connecting links. As a rule, though, districts which previously had been ravaged were now comparatively exempted. The majority of cases were also now found in the rural districts, but several cases occurred in the larger cities — in Christiania there were sixty-two cases with twelve deaths. During the first months of 1912 sporadic cases of acute poliomyelitis — 117 cases with five deaths — occurred. The same year an extensive epidemic of several hundred cases of cerebrospinal meningitis infested Christiania and neighboring districts.

II. GENERAL EPIDEMIOLOGY

From the foregoing history it will be evident that acute poliomyelitis has been prevalent in Norway for almost a century, further, that small epidemics have been observed and described for about forty-five years. Consequently, we must assume that its virus has been constantly present in our country and if not active in the form of smaller or larger epidemics at least latent in many and different districts which again under favorable circumstances have been the starting-points for dissemination of the disease. Only during the last twenty or twenty-five years have the Norwegian physicians collectively given much attention to this scourge and considered it to be of an infectious nature. This was first pointed out by Bull in 1868, openly pronounced by Leegaard in 1889 and strongly advocated by Bülow-Hanson and Harbitz in 1898, culminating in the State Board of Health circulars of 1904 and 1905 with a view of checking or preventing the occurrence of the disease.

The conclusions of the Norwegian physicians in regard to acute poliomyelitis are in the main that epidemic poliomyelitis is an acute infectious disease which, as indicated by several observations, must also be considered contagious.

The disease as a rule has started in widely separated smaller epidemics; somehow in an explosive manner in one or more places simultaneously, and without any apparent connection. It has been observed regularly that cases of genuine poliomyelitis (with paralysis), Landry's paralysis with subsequent deaths and abortive cases have occurred simultaneously and in the same localities, but no cases of neuritis, transverse myelitis or encephalitis.

The abortive cases were characterized by a transient fever, pains in the extremities, back and neck, nausea and vomiting, increased reflexes, a train of symptoms which often were mistaken for those of a heavy cold or "influenza," and so much more easily, as the symptoms quite strongly reminded one of the first severe epidemics of influenza or morbilli in previously uninfected districts.

For the contagiousness of the disease there are different theories. Even where the disease was greatly disseminated and single cases occurred simultaneously it could be determined by careful investigation that the disease had spread along the lines of communication, along the highways, railroads and steamship-routes, along the coast and into the fjords by smaller vessels from one place to another, but with different grades of velocity. This would be particularly manifest in sparsely inhabited districts with poor communications. Several reports pointed to small epidemics having started in schools, country stores, dairies, public meetings, weddings, funerals, or they could be traced to gypsies and other wanderers. These obstructions strengthened the theory of a direct contagion. In the study of virulent house-epidemics it was also found that one member of the family after the other became infected with a few days' intermission, and that they would exhibit the disease in its different forms. As an example the following may serve:

A physician treated some sporadic cases in his district in the latter part of June and the beginning of July. July 15, he himself became ill with fever, pains in the back, great exhaustion, diarrhea and vomiting. He recovered in three days. July 16, his son, aged 3, was seized with the same symptoms. July 18, his son, aged 5, was stricken in the same manner. He also recovered in three days. July 22, his oldest son was taken with well-defined gastro-intestinal symptoms, stiffness of the neck and paresis of the extremities and facialis. He recovered in eight days without permanent paralysis. The following days his 1-year-old son, the nursemaid, his wife and her sister were taken sick with acute angina, stiffness of the neck and fever; and finally a neighbor's child, who had been a playmate of the physician's children, was stricken with symptoms of a genuine poliomyelitis and with subsequent permanent paralysis.

5. Leegard, C. B.: Videnskabselsk, Skr. I, Mathem-Naturvid, Kl., 1908, No. 11, Kliniske og epidemiologiske Undersögelser over den acute Poliomyelit i Norge medsärligt Hensyn paa dens Forekomst i Aaret, 1905.

6. Gram: Tiddskr. f. d. norske Lægefor., 1911, p. 856.

When these cases are studied in connection with each other it seems reasonable to assume that here was a virus which easily and quickly spread from person to person.

As an argument against the contagiousness of poliomyelitis it has been advanced that nurses who take care of these patients escape the disease. This argument does not hold good; in a separate pavilion of the hospital for epidemic diseases at Christiania were several poliomyelitis patients during July, August and September, 1911. Two of their nurses, aged 28 and 29, became ill in the latter part of August and died with acute poliomyelitis. They had served in this hospital-division for about one month. The virus must, however, have been quite widely disseminated in this hospital, because in August there occurred among the children in the diphtheria pavilion four cases of acute poliomyelitis of which three were in the same ward. In the scarlet-fever pavilion one case of acute poliomyelitis occurred in a child who previously had been taken care of by one of the two nurses who died from poliomyelitis, and finally a nurse who served in one of the medical sections of the same hospital took the disease and died. . In this last case it was impossible to trace the source of infection. These cases which occurred almost simultaneously can be explained only by the existence of a direct infection and wide dissemination of the virus among adults and children.

The time of incubation, according to Norwegian experience, has been quite short — two, three or four days, but at times longer. Cases were observed in which a latent condition of the virus must be assumed. An example of this is the case of a young woman who had been in solitary confinement for three months and had contracted acute poliomyelitis. Hers was the only case inside the prison, and it is reasonable to conclude that she came to the institution already infected.

The infection is as a rule carried from one person to another. Of great interest are the abortive cases, which have been found to be just as contagious as the cases of well developed poliomyelitis. It must be supposed also that the infection can be spread through the intermediary of healthy bacillus carriers who have had a latent infection not infrequently for longer periods. Through this assumption is explained the extended time of incubation sometimes noted.

According to our experience, the mode of entrance must be the throat, nose and alimentary tract.

The degree of infectiousness as a rule may be designated as not so great. This is proved by the fact that only one case might occur in one household or among a large family of children, several of these even sharing beds; further, by the fact that only sporadic cases would occur in a well-populated country district or even in a large city. But here again we must take into consideration the fact that latent infection and lighter abortive cases have been much more widely spread; this has been proved by the fact that a district infected with sporadic cases or small epidemics the next year would be exempt from the disease.

In Norway there is no safe foundation for the belief that foods might be the source of infection nor any support to the theory of a coexistent infection of animals and a conveyance of the infection through them. Simultaneously with the poliomyelitis epidemics a great many deaths have occurred among animals, caused by epidemic diseases. These have been prevalent among chickens, reindeer, dogs and cats. By further examination into these conditions any connection between the etiologic factors of the diseases of these animals and acute poliomyelitis has been disproved. Experiments made under control have given the same results. During the epidemics of 1911 with its unusually dry summer, masses of flies and other insects (fleas) were in evidence. The possibility of an indirect conveyance of the infection by these insects (see Flexner and Lewis' experiments) may be admitted, but there is no proof or convincing examples of such occurrences.

In the epidemiology of acute poliomyelitis are several unexplained points: (1) its breaking out in great epidemics in certain years without reference to changed climatic conditions; (2) that most cases occur during the summer and fall and only sporadic cases during winter and spring; (3) that the disease is most prevalent in the rural districts, and, finally, (4) that the different epidemics vary in the degree of contagiousness and malignancy in the different years and in different localities.

Such, however, is also the case with other diseases with well-known contagiousness as, for instance, epidemic cerebrospinal meningitis. This disease, which also assumes an epidemic nature, has been known in Norway for a great many years, is found preferably during the cold season and has, according to our experience, clinically and anatomically nothing in common with acute poliomyelitis, and they must be considered as two specific, entirely independent diseases.

III. MEASURES AGAINST AND TREATMENT OF THE DISEASE

Recognizing acute poliomyelitis as an infectious, contagious disease, the chief medical officer of the National Board of Health on May 26, 1904, sent to all physicians of our country a circular directing that acute poliomyelitis should be classed with the epidemic diseases subject to public control. In a circular of May 28, the same year, he further specified the measures to be taken:

1. Immediate notification to the board of every case, abortive cases included, with a short history of the disease and its etiology.

2. Isolation of the sick during the acute stage for three weeks.

3. Careful disposition of the patient's excretions and secretions, particularly from the nose and throat. The patient and everybody who came in contact with him were recommended to use gargles at regular intervals, consisting of solutions of potassium permanganate or hydrogen peroxid. The sick should be furnished with separate dishes, handkerchiefs, pillowcases, etc., and anything soiled with secretions or excretions from the patient should immediately be boiled.

4. Disinfection of everything in contact with the patient for a time of three weeks from the beginning of the disease.

5. Particular attention given to the lighter abortive cases and patients with symptoms of angina; also to the possibility of the disease being carried through the intermediary of healthy persons.

6. Attention paid to the possibility of infection through schoolchildren. In much-infected districts it was recommended to close the schools, and healthy as well as sick children from infected homes were prohibited from appearing at school for some time.

These measures received active cooperation from the local health boards of the infected districts. The local board at times took even more drastic measures by prohibiting public meetings and vaccination during the prevalence of an epidemic. As a rule those measures

were undertaken too late when the epidemic was in full outbreak, but reports from districts, especially those more sparsely inhabited, and those where the measures had been early instituted, show that these precautions helped to limit and stop the disease. This again seems to point to the contagious nature of acute poliomyelitis.

The treatment of individual cases has been mainly symptomatic, and possibly not of much avail. Dr. Sinding Larsen[7] recommends that treatment begin with laxatives, for instance, calomel followed with urotropin (hexamethylenamin) in doses of 0.30 gm. three times a day, and good results have been given in some cases. Spinal puncture and aspiration of spinal fluid were recommended and have seemed to act favorably by mechanically lowering the cerebrospinal pressure. Prophylaxis in the way of careful frequent antiseptic gargles and sprays of nose and throat have been found useful.

Persons with abortive cases and supposedly infected persons are admonished to exercise particular care in avoiding exposures to cold and overexertion, which experience has taught can excite the disease, with subsequent paralysis. For the resulting pareses and paralysis massage, persisted in if necessary for weeks to years, has seemed to be of great value.

The medical authorities have demanded reports on the frequency and nature of disabilities resulting from the disease with a view of considering how steps can be taken to give these patients massage, surgical or orthopedic treatment at public expense. The preliminary report shows that following the epidemic of 1911 about 400 cases (32 per cent.) of permanent disability were recorded. Measures will now be taken to examine further into the degree of disability and to inaugurate suitable treatment of such cases. The chief medical officer of the State Board of Health on petition has been granted funds for the purpose of: (1) systematic examinations into all the epidemics of late years, and (2) experimental research on apes to secure if possible a more thorough understanding of the modes of infection of acute poliomyelitis.

These investigations are conducted by the bacteriologist and sanitary inspector of the State Board of Health, Dr. Gram; Dr. Aaser, the chief physician of the municipal hospital for infectious diseases, and E. U. Hansteen, the prosector. No conclusive results have as yet been reached.

7. Larsen: Tidsskr. f. d. norske Lægefor., 1911.

A CONTRIBUTION TO THE ETIOLOGY OF POLIOMYELITIS *

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The lesion of poliomyelitis confines itself mainly to the cerebrospinal system and produces focal clinical symptoms. This part of the human organism is rather remote from the external surface of the body and very tightly boxed in, as it were, and well protected from external influences. An infection, therefore, must primarily reach these tissues either through the circulatory or through the lymphatic system.

Experimentally, the disease was produced by injecting monkeys with the infected spinal cord and brain intracerebrally, intraperitoneally, by rubbing it into an abraded surface and an unabraded one of the nasal mucosa, into the nerve-sheath and finally by rubbing it into an abraded surface of the skin. It was further shown that the nasal mucosa contains the virus quite early in the incubation period of the disease—three days after injection of the virus—and that the tonsils, the salivary glands, the retroperitoneal glands and lung tissue are infected as well. There is unmistakable evidence that the pia of the anterior longitudinal fissure of the cord is the primary seat of the lesion, and in my own two cases the pia surrounding the cord contained marked lesions while the vessels and gray matter were intact and the cases were of the abortive type. It is an established fact that, while a very small quantity of an infected-cord emulsion—0.1 c.c.—of a high strain is enough to produce the disease, it would take a comparatively large amount of the blood-serum of the same animal—20 c.c.—to be effective. That the intravenous route of injection did not yield any good results so far is a very striking contrast to the uniform results obtained with the above-enumerated methods of experimentation.

From these facts we must conclude that the lymphatic circulation is the primary route and the circulatory system the secondary and, with the gray matter of the cord and brain, the coincident seat of the lesion. For this route of infection three avenues are obviously open, namely, the nasopharynx, the lungs and the alimentary canal.

It is true that in about 33 per cent. of the cases there are gastro-intestinal disturbances, but we must not lose sight of the fact that the disease is an infantile one and is coming on during the summer months so that, aside from the fact that an infection of any kind is apt to produce a gastro-intestinal disturbance in any infant, there might be quite another cause for these disturbances, such as bad food or the swallowing down of the irritating nasopharyngeal discharge containing the virus. Experimentally, the disease was produced in one instance through the alimentary canal in the monkey after an opiate was administered to the animal so as to paralyze the peristaltic movements of the intestine, and in no instance was the disease produced by feeding the animals with the feces of poliomyelitic patients. Pathologic findings in the gastro-intestinal tract in my cases so far reported were negative. Thus the alimentary canal may be excluded as a focus of infection.

In some instances characteristic lesions of poliomyelitis were reported to have been found in the lungs,[1] but these were rather few and since the nasopharynx, according to my theory, is the point of entry for the virus, it would seem to be a striking coincidence, which after all might be accepted as a further proof of my theory.

The nasopharynx is then the only avenue left and now we are facing the problem, the first phase of the paper, the mode of infection.

For a period of eleven years I have had the opportunity to examine schoolchildren of ages from 6 to 14 years. I have noticed that between the ages of 5 and 8 years there are present hypertrophied tonsils in 85 per cent. of the children examined, but as we go up in the age-scale, say at 14, we find only about 15 per cent. of the children with hypertrophied tonsils. The question

* Read in the Section on Nervous and Mental Diseases of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

1. Flexner, Peabody and Draper: THE JOURNAL A. M. A., Jan. 13, 1912, p. 109.

naturally arose, what has become of these tonsils? My explanation is that these children of from 5 to 8 years of age are forced to breathe the air nearest to the ground, which is more full of solid particles than the upper strata of atmosphere, and that these solid particles are constantly irritating the nasopharynx and producing the condition described. As the child grows taller and is inhaling air of a lesser density, so far as dust particles are concerned, the irritation subsides and the tonsils atrophy.

Since poliomyelitis is preeminently an infantile disease, occurring in the dry season, since no particular neighborhood or character of the living premises plays any material part in the spread of the disease, since several children in the same family may be attacked successively and since in a given house children are attacked in different families in fairly quick succession and along lines of neighborly communication, I have concluded that the virus probably lurks in the dust and the nasopharynx must be the point of entry. That the lymph-current is the avenue of transmission strengthened my theory.

In the early part of 1910 I began my experiments to prove this theory. The experiments were fully published,[2] but I shall take the liberty of giving a cursory review.

Sweepings of rooms where cases of poliomyelitis occurred, together with the dust accumulated on wooden trimmings of rooms, were collected and prepared for injection in the following manner: The samples of sweepings were macerated in sterile water for a number of hours, the menstrua were filtered through paper and then through a Berkefeld and French bougé porcelain filter, respectively. These filtrates were then injected intracerebrally, intraspinally and subcutaneously into monkeys. Two of the monkeys had abortive attacks, as subsequently proved by clinical symptoms and pathologic findings. One monkey injected with the extract of the dust of a very severe case had all the clinical features and pathologic lesions of poliomyelitis. An emulsion of the brain and cord of the infected monkey was injected into two other monkeys and both animals showed the clinical symptoms and pathologic lesions of the disease after an incubation period of seven and fourteen days, respectively. As a control four other monkeys were injected in the following manner: One animal was injected with sterile water; a second one with normal salt solution; a third one with an extract of dust from two different rooms in two different houses where no case of poliomyelitis occurred, prepared in the same manner as was the dust of all other rooms where cases of poliomyelitis occurred. The sterile water as well as the salt solution were passed through a Berkefeld filter before injection. The fourth monkey was injected with an extract of the brain and spinal cord of a normal monkey. All the four monkeys remained well and are well to-day after the lapse of five months. Another monkey was injected with a five-months-old emulsion of a poliomyelitic monkey which was kept in a refrigerator. This animal was quite ill after seven days but fairly recuperated. A month thereafter it was killed and we found the characteristic lesions of poliomyelitis in the surrounding pia of the cord, but the vessels and to an extent the cord-substance were intact. This monkey evidently had an abortive attack. It is pertinent here to remark that not all the monkeys contracted the disease. I have thus proved the theory that poliomyelitis virus lurks in the dust of the sick-room, and we may also conclude from the above experiments as well as from the heretofore-enumerated deductions that the nasopharynx is the point of entry.

While my experiments with nasal discharges of patients suffering from poliomyelitis and the experiments of Strauss and Rosenau were positive failures, Kling, Wernstedt and Pettersson[3] were more fortunate in their work. They have succeeded in demonstrating the presence of the virus in a viable condition in the nasal, buccal, tracheal and intestinal mucus in nine fatal cases of poliomyelitis and in twelve out of thirteen living patients suffering from the disease. Their work was well controlled and their results are of a most convincing nature.

This is certainly the last and most complete link in the chain of my theory and I dare say that the most skeptical hypercritic must admit its validity.

THE MANNER OF DISSEMINATION

The manner in which the virus finds its way into the dust is no longer pure conjecture. The nasopharyngeal discharges are certainly the medium of the transfer of the virus into the atmosphere in the same manner as the bacillus of tuberculosis. Once in the atmosphere the virus may be disseminated in the following manner: (1) by direct contact; (2) by healthy carriers, as human beings, on clothing or by domestic animals; (3) by winds scattering the dust; (4) by bathing in stagnant water in an infected neighborhood.

These propositions are practically illustrated in the report of 150 investigated cases of poliomyelitis by Robert W. Lovett[4] which occurred in 142 families:

> The evidence of communicability in our series of cases is a very important matter. We had instances of direct contagion from child to child, with an incubation period of from one to fourteen days. We had a number of instances of what appeared to be indirect contagion by a healthy carrier, and finally we had eleven instances in the 150 cases in which the disease followed intimate contact with persons with old infantile paralysis, often of many years standing. Instances of what would appear to have been contagion occurred in thirty-five out of the 150 cases. Of the 150 patients sixty-two were swimming or wading in stagnant water just before the onset.

A German observer found the disease in an unduly large proportion of shoemakers' children, who were much in the shops where the dried dust was flying about. Then, again, the disease is most prevalent along the course of railroads up to within a mile of them, as is well illustrated in Table 1.

TABLE 1.—RELATION BETWEEN DUST AND POLIOMYELITIS AS OBSERVED BY LOVETT AND RICHARDSON AND A. E. SHEPARD

LOVETT AND RICHARDSON*		A. E. SHEPARD†	
Amt. Dust	No. Cases	Amt. Dust	No. Cases
No dust	0	No dust	0
Very little dust	29	Moderate amount	112
Much dust	118	Much dust	81
Moderate amount	195	Excessive amount	7
Excessive amount	8		
Total	350	Total	200

* Lovett and Richardson: Ann. Rep. Mass. Board of Health, 1911, p. 83.
† Shepard, A. E.: Ann. Rep. Mass. Board of Health, 1911, p. 115.

Some English observers have lately reported substantially the same results.

Thus we have reached the third part of the paper.

2. Neustaedter and Thro: New York Med. Jour., Oct. 21, 1911.

3. Kling, Wernstedt and Pettersson: Ztschr. f. Immunitätsforsch., 1912, xii, 316, 596.

4. Lovett, R. W.: Pediatrics, 1910, xii, 574.

A NEUROPATHIC CONSTITUTION NECESSARY IN THE ETIOLOGY OF POLIOMYELITIS

It is a significant fact that while the disease is highly contagious and infectious, and, as shown by me, the virus is found to be in a viable condition in the dust of the sick-room, yet we find, comparatively speaking, few cases of infection during an epidemic and in rare instances more than one case in a given family reported. In hospitals where patients with poliomyelitis were confined no case of infection by other patients has been as yet reported, with the exception of one case in a Massachusetts hospital.

TABLE 2.—FAMILY HISTORY IN THIRTY-ONE CASES

Case	Name	Age	Family History
1	N. N.	2 years.	Father has tabes.
2	J. K.	4 years.	Mother's only sister has chorea.
3	C. S.	3 years.	Mother neurotic.
4 and 5	F.	6-8 years respectively.	Father highly neurotic; paternal grandmother died insane.
6	N. F.	2½ years.	Mother neurotic.
7	J. F.	3 years.	Mother epileptic; father alcoholic.
8	S. R.	3 years.	Mother had eclampsia (puerperal); is constitutionally inferior.
9	C. W.	3 years.	Negative.
10	M. B.	3½ years.	Negative.
11	S. S.	4 months.	Father highly neurotic; paternal cousin had poliomyelitis.
12	E. L.	3 years.	Mother neurotic.
13	W. case.	2 years.	Mother insane.
14	J. S.	1 year.	Mother's sister epileptic.
15	N. N.	1 year.	Maternal cousin has chorea.
16	C. K.	1 year.	Father's sister and aunt insane.
17	G. K.	½ year.	Father's mother became suddenly deaf, mute and blind and died of apoplexy.
18	P. C.	1 year.	Mother's aunt paralyzed.
19	G. W.	5 years.	Mother epileptic.
20	L. G.	1 year.	Mother neurotic; maternal cousin had poliomyelitis.
21	J. L.	2½ years.	Father neurotic; two of his cousins have poliomyelitis and other cousin has Little's disease.
22	G. K.	1 year.	Maternal second cousin epileptic.
23	J. F.	1 year.	Negative.
24	F. C.	1 year.	Mother neurotic; maternal aunt has chorea and cousin has poliomyelitis; paternal aunt has chorea.
25	S. B.	8 months.	Negative.
26	L. E.	2 years.	Maternal aunt insane.
27	E. G.	1 year.	Mother neurotic; paternal aunt insane.
28	G. K.	8 months.	Father suffers from general paralysis of the insane.
29	C. S.	4 years.	Negative.
30	H. W.	2 years.	Maternal cousin has poliomyelitis: patient fell same day before the onset of fever, injuring his back.
31	C. W.	2 years.	Negative; received a blow on the spine on the day of the onset of the fever.
32*	S. L.	2 years.	Maternal cousin suffers from some nervous trouble.
33	L. E.	2 years.	Maternal aunt insane.
34	I. R.	10 months.	Paternal aunt imbecile.
35	S. L.	9 months.	Mother neurotic; sister has chorea.
36	S. M.	2 years.	Brother has infantile cerebral palsy.
37	J. McB.	4½ years.	Mother neurotic.
38	A. A.	1½ years.	Paternal grandmother was paralyzed in all four extremities.
39	M. B.	4 years.	Maternal cousin died in convulsions.

* Cases 32 to 39 have been investigated since the reading of this paper.

This pertinent question has stimulated me to inquire into the histories of my cases with the greatest care. Although I have complete histories of only thirty-one cases, I regard the facts elucidated as something more than a mere coincidence. I found that in a vast majority of my cases there is a hereditary weak point, a focus of minor resistance, a predisposition in the cerebrospinal system, which causes it to give way under certain favorable conditions. In other words, the virus of poliomyelitis must have a fertile ground on which to thrive and because, fortunately, there rarely is such a predisposition, we have, comparatively speaking, so few cases.

Tuberculosis, it seems to me, would offer an ample analogy. Here we also have the virus in a viable condition in the dust and atmosphere of our homes, of vehicles of transportation, of hospitals, everywhere, and yet not everybody contracts tuberculosis. It certainly is an accepted fact to-day that we must have a hereditary or acquired predisposition as a primary condition in order that the tubercle bacillus may exhibit its baneful influence on the tissues.

In Table 2, of thirty-nine cases, we find thirty-three with hereditary taint, a neuropathic constitution, and six negative. While I do not desire to draw conclusions from so few cases, I believe the histories of these cases are significant enough to stimulate investigations along these lines.

METHOD OF PREVENTION

At the present state of our knowledge or rather ignorance of the character of the virus and our inability to diagnose the disease before the onset of the paralysis a curative measure is not to be thought of. One familiar with the pathology of this disease will certainly realize the truth of this statement.

But measures of a prophylactic nature to prevent the spread of the affection may be instituted with a fair degree of success. These must be carried out with a view of eradicating the causes above enumerated.

1. The streets of a neighborhood where cases occur ought to be thoroughly washed and oiled daily.

2. The floors and trimmings of an apartment where a case occurs must be scrubbed daily with an antiseptic solution.

3. Everyone occupying this apartment should have his nasopharynx sprayed with hydrogen peroxid to be followed by a spray of salt solution. This procedure applies equally to the patient.

4. A strict quarantine should be maintained for at least two months.

5. Bathing in stagnant water in a neighborhood where a case occurred should be prohibited, as well as playing around sand heaps.

6. Domestic animals should be thoroughly disinfected, thoroughly bathed and scrubbed with an antiseptic solution, and removed from premises.

111 Second Street.

ABSTRACT OF DISCUSSION

DR. C. L. DANA, New York: We neurologists need particularly to have a little more knowledge of methods of preventing this disease. Dr. Neustaedter has given methods of prophylaxis; but I think his formulary would hardly apply in all regions. You cannot wash domestic animals, such as the cow and horse and hens, and you cannot oil all streets; his suggestions are counsels of perfection which cannot always be reached. But there are various measures which I think ought to be more or less standardized by this time. It ought to be one of the functions of this section, it seems to me, or of neurology in general, to help formulate definite and well-adjusted measures of prophylaxis. I know that has been done by the Public Health Service, and by various state boards of health; but they all differ a little and no one of them is very satisfactory.

DR. TOM A. WILLIAMS, Washington, D. C.: I have written a paper attempting to explain, on the grounds of localized anaphylactic reaction and the chemotaxis of the unknown particular noxa of poliomyelitis, the reason for the incidence

of this condition on certain different parts of the nervous system in different cases. In 500 cases, which we had in Washington two years ago, we did not find the biologic factor of nervous heredity which has been so conspicuously presented just now by Dr. Neustaedter, although his cases are most striking in that regard. It may be that they are coincidental, because in the New York epidemic I do not think that the same remarkable association was ascertained. It would seem *a priori* that a general susceptibility of the nervous system to such very different disorders as were described in the paper should not predispose to attack by this infection, which is of mesoblastic type. It is not a nervous disease at all; it is a vascular lymphatic disease, and the nervous structures are affected coincidently on account of their situation relative to the vessels which are more particularly conveyers of the contagion. Besides which the contagion has been found in very different organs to those of the central nervous system.

With regard to the mode of prevention, we are hopelessly at sea when we consider that one case in a district will not convey the disease to children in intimate contact, when we consider the extreme rarity of hospital infection and when we consider the extraordinary leaping of the infection from case to case in the large epidemics. The measures advocated by the various health boards seem to be more or less in the air. Recently I have seen allusions made to the bedbug as a source of the conveyance of the disease, and that is worth keeping in mind in our research; but we failed to obtain data from patients or physicians in Washington in that respect during our research in 1910 (*Washington Med. Ann.*, May, 1911).

DR. ALBERT E. STERNE, Indianapolis: The peculiar regularity that we see in the manifestations in different individuals within the epidemic or endemic zone is interesting; it is notably the fact that there are many cases, relatively speaking, which do not show the full-fledged typical picture of what we have been commonly calling acute anterior poliomyelitis. There are many cases now on record, and we have all of us seen them probably, in which the polio-encephalitic inferior type is shown without the myelitic type prevailing. Again, the peripheral type shows occasionally in a very mild form. Last year we saw a number of these cases in Indiana, in which there was unquestionably in play the epidemic-endemic type of poliomyelitis, but in which the manifestations were extremely mild; and I discovered these milder cases, on the one hand, and the severer cases, with extremely rapid course, on the other, as also the upper medullary type in the same epidemic. These cases are a possible danger to the community, because they may not be recognized and hence not reported as epidemic-endemic poliomyelitis.

DR. A. L. SKOOG, Kansas City, Mo.: The nasopharynx is undoubtedly a source of infection; but I do not believe that it is the only source. Dr. Neustaedter mentioned the fly and other insects as possible carriers; some work has been done along that line, and it is possible that the fly may be a carrier. I agree with him about these epidemics following railroads. I have observed that point during my work of the last three years; and I think that holds true also in epidemic cerebrospinal meningitis. I do not agree with the idea that the disease attacks those of hereditary neuropathic tendency more than others. I have seen over a hundred cases during the past three years, and many of them I have had opportunity of studying rather closely in the families, having been sent out by the Kansas State Board of Health through the state, and mingling with the relatives as well as the patients, and I do not believe that there is any more heredity among these families than among the average of people that you see. If we take the statistics of New York state, I believe the number of mental defectives is about 1 in 100. If we accept that percentage and look up the families we will probably find very few families in the state of New York that are not tainted a little. Possibly in the far West or in the West that does not hold as it does in the effete East.

A number of boards of health as well as the Public Health Service have given out instructions as to how to prevent poliomyelitis; they do not agree entirely, although they do agree in the main, and the point which Dr. Dana made about difficulty in carrying out all these fine points in prophylaxis is well worthy of consideration.

DR. M. NEUSTAEDTER, New York: If we can afford to oil streets for automobilists we can afford it for little children. The oiling and washing of the streets has been practically demonstrated to be of great value in the late epidemic in Massachusetts, where they have proved that in neighborhoods where the streets are thoroughly washed and oiled the epidemic stops. In Cornwall, England, last September, as stated in the *British Medical Journal*, an epidemic was stopped in one week after the roads were thoroughly washed. It is not a question of washing away or killing the germs, but of keeping down the dust and thus keeping down the germs.

Of course, statistics do not always tell the truth, and I have not attempted to draw any conclusions from so few cases. I have merely pointed out that it might not be simply a coincidence, and it is worth while to inquire along these lines. I have simply indicated what I found. Dr. Skoog's remarks on tainted families in New York I would not criticize, but I would insist that we have just as few tainted families here as in the West.

I have spoken of the age in school children with respect to tonsils, merely as indicating one of the reasons which brought to my mind why poliomyelitis attacks mainly little children, and I have simply drawn an analogy that as these 5- and 6- and 7-year-old children are condemned to breathe an area of atmosphere full of dust, so these little tots are condemned to breathe the area of dust when walking below. So it seemed to me that the dust was propagating the disease.

MEDICAL SOCIOLOGY IN CIVIC BETTERMENT *

OTTO P. GEIER, M.D.
CINCINNATI

About six months ago at a meeting of the National Municipal League at Richmond, Va., I heard an interesting paper on "Economy and Efficiency in Health Administration" by S. M. Gunn, professor of sanitary biology and public health at the Massachusetts Institute of Technology. Professor Gunn rather severely and perhaps justly criticized medical health officers of the present day and then proceeded to prove that trained sanitarians should hold these positions. He said:

> Apparent economy may be attained by an untrained man, but in most cases true economy, combined with efficiency, cannot be had unless the health administration is in the hands of an individual thoroughly trained in the sanitary arts . . . It cannot be expected that any one who has not received special training, or who has had merely the few hours of hygiene allotted to the subject in a medical school curriculum, is the proper person to be put in charge of the public health activities of a community. The first essential for any city which is honestly seeking to maintain a health department of real value is to secure the services of a trained sanitarian. There is no alternative in this matter.

In concluding, Professor Gunn stated that if health departments are to be economical and efficient, we must free them from politics with its accompanying uncertainties and strife.

In the discussion which followed, M. N. Baker, editor of the *Engineering News*, further read the death warrant of the medical health officer when he said:

> The question is how and where to get trained men for the work. The training of even the best medical schools is not in the direction of public health work. . . . We are not, how-

* Read in the Section on Preventive Medicine and Public Health of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

ever, so badly off as might be thought, because some of our best technical schools, through their courses in sanitary engineering and in sanitary biology and chemistry, are turning out men who are much better qualified to take up the work of the health officer than are those who are the graduates of medical schools . . . Already a number of cities are employing engineers as health officers . . . When doctors are employed, we find either a poor weakling of the medical profession, who has been given his office out of pity or political favor, or else an ambitious young man who is taking up the work while trying to build up a medical reputation.

I have quoted the above arguments at some length because of their authoritative source and because it so aptly illustrates a tendency of the times which is not only to belittle the past attainments of medical men as health officers, but also to discount their ability to handle the problems of to-day and the future. I challenge these statements. These biologists and engineers have apparently forgotten that the tremendous advances in sanitation and hygiene of the past decade have come with physicians generally in charge of all health work; that this progress has been made in spite of the fact that politics has more or less pervaded all health administrations. They themselves assert that even the sanitary engineer can succeed only when the department is freed of politics. Have they not also forgotten, among other things, that it is a physician who has made possible the greatest engineering feat of history, the digging of the Panama Canal, after French engineers had failed because of their lack of knowledge of sanitary laws?

That the municipality to-day needs the services of a sanitary engineer is not to be denied. It also needs food inspectors, chemists, bacteriologists and veterinarians; but to obtain the best results from all these the municipality needs a highly qualified physician in charge, to direct and coordinate their work. The question is not one of the ability of a medical health officer to handle the work, but rather the failure of communities to recognize the importance and the necessity of putting the best available physician at the head of it and giving him sufficient power to follow his ideals. Has not the fact also been overlooked in the discussion of this subject by the biologist and engineer, that it is the medical profession which has created the field of the sanitary engineer?

The sanitary engineer demands good pay, and in criticizing health officers as a class, forgets that thousands of medical health officers have been serving without pay or for some pitiful sum in the great bulk of the lesser communities. Has not this unselfish work been the very inspiration, the energizing force in communities which has finally stirred them to an appreciation of the value of preventive health measures? There is hardly a city of any size in which the physicians have not led some movement for health betterment and by such movements educated the public and eventually forced city officials to improve health administration.

HEALTH PROPAGANDA IN CINCINNATI

Cincinnati can be quoted as perhaps the most notable example of such evolution as regards her health department. All the governmental functions of our city had been in the grip of an almost invincible political organization, the Cox ring, for nearly two decades. So compact was their organization, so complete their control, that it held in terror not only the public service corporations but our so-called "best citizens." This organization, of course, controlled the health department and usually selected a fairly well-known physician as health officer and thus placated the public. The organization controlled all the appointments under him. The medical officer accepted the seemingly inevitable and did the best he could under the circumstances.

Cities are said to gain little from spasmodic reform, but let us see how the medical profession of Cincinnati made use of their one opportunity. In 1905 the Cox ring was defeated and the newly elected mayor selected as health officer Dr. S. E. Allen, a man of no experience in health affairs, a specialist, in fact, but a man above all things honest, fearless and with a broad social outlook. He appointed equally fearless men as his chief meat inspector and chief milk inspector. In attempting to carry on their initial inspections these men met with all sorts of obstacles, to say nothing of attempted bribery. The published annual reports of their predecessors had stated that everything was in fine condition, and yet Cincinnati was experiencing the second highest death-rate from tuberculosis in the country and its infant mortality was frightful. Now Cincinnati began to know the truth about her dairies and slaughter-houses. The findings of the inspectors were amazing and our new health officer began to visit the dairies himself. Federal officers stated that our dairies were indescribably filthy and "the worst in the country."

The practice of feeding wet distillery waste to cows had become universal and had produced a low type of city dairy. The health officer, recognizing that this style of slop feeding was responsible for the low standards of the dairymen, attempted to stop the practice by legislative action of council. The distillers with their tremendous influence and big fortunes, by injunctions and otherwise, temporarily delayed progress and so this efficient health officer sought other means of helping the situation. A medical milk commission was organized in May, 1906, by the county medical society and fortunately so, for it was this body which continued the fight for clean milk when on the following December our courageous health officer lost his position through the return to power of the Cox organization. Now we could hope for nothing locally, and so the next month a bill was introduced in the state legislature forbidding the sale of milk from cows fed on distillery waste. By this time the milk commission had introduced the production and sale of certified milk, and through publicity had gained the public's confidence. For the next three months a terrific battle was waged between the medical milk commission, fortified by the valiant ex-health officer on one side, and the distillers on the other. The distillers' efforts were strengthened by the former milk inspector, who had now regained his position. It was a battle royal, not confined to Cincinnati, but carried to the state capitol. The milk commission desired the endorsements of the several civic organizations and secured them too, but not until the controversy threatened with disruption the most powerful of these organizations, in which the whisky interests represented over one-tenth the membership and perhaps one-half the moneyed interest. Yet, although the directors of this club were threatened with wholesale resignations if they endorsed the pure milk bill, they stood their ground. When the bill finally became a state law, the Cox board of health refused to enforce it. The milk commission now began legal prosecutions under the law and waged such a forceful campaign for a new and non-partisan board of health that the Cox organization realized the futility of further antagonizing public sentiment. In August, 1909, the council organized a board of health along ideal lines, with the terms of the members so overlapping that a definitely constructive and continuous

policy has been possible ever since. We now feel that the great difficulties encountered at the outset have proved our greatest blessing in that every good citizen became acquainted with the real issue during the long-drawn-out fight. A definite public sentiment was crystallized in favor of clean health administration which will resist the attempts of any political organization ever to interfere with our health department affairs.

Our health officer and his force now, for the first time in our history, give full time to the service, and Cincinnati is rapidly reaching a place where its department of health will court comparison with the best in the country. This detailed recital is made to show that a few determined physicians can withstand the strongest political organization even when it is allied with "big business," and thereby accomplish much for the cause of good government as well. When the Cox machine was overwhelmingly beaten in the mayoralty campaign last fall, it was freely stated that the health department fight had contributed not a little to the organization's disruption, in that it had made new lines of cleavage in political ranks heretofore absolutely solid. It was probably more than coincidence that our new mayor, Henry T. Hunt, was the very representative in the state legislature who had brought to a successful issue the fight for the pure milk bill several years before.

Now let me add that it was not a "trained sanitarian" who started the revolution in Cincinnati health affairs, but just a plain medical man with a professional sense of duty, coupled with a broad social point of view. Cincinnati's experience can be duplicated in any other city if the medical men will fearlessly oppose the injection of politics into health affairs.

Another interesting fact in connection with this campaign is that city administrations are now very generous to the health department. In 1911 the health department secured an increased budget of 8.2 per cent. over that of 1910, and in 1912 an increase of 13.2 per cent. over 194. Let us see whether this struggle was worth while.

INCREASE IN EFFICIENCY OF CINCINNATI HEALTH DEPARTMENT

	1910	1911
Expenditure	$72,401.51	$78,902.19
Dairies under inspection	about 350	3,500
Dairies in Class A	1	58%
Average bacteria per c.c.	5,700,000	770,000

Decrease in mortality in infants under 2 years of age from diarrheal diseases in 1911 over 1910, 28.6 per cent. (109 infants).

The first inspection in 1911 of the plants of wholesale milk-dealers showed the following:

Equipment, 12.9 Methods, 18.6 Total score, 31.5

The last inspection showed:

Equipment, 23.9 Methods, 36.6 Total score, 60.5

The first inspection of retail milk-dealers in 1911 showed:

Equipment, 17.6 Methods, 26.4 Total score, 44

The last inspection showed:

Equipment, 29.1 Methods, 38.3 Total score, 67.6

SUMMARY

	1910	1911
Dairy inspections	1,636	5,863
Milk depot inspections	79	815
Store inspections	244	9,150
Total	1,959	15,838

Increased efficiency of milk inspection 707 per cent. over 1910; increased cost, 7 per cent.

MEAT INSPECTION

	1910, Part Time Force	1911, Full Time Force
Veterinarian in charge	1	1
Butchers	7	0
Veterinarians	0	7
Value condemnations	$3,248.50	$9,564.00
Other foods condemned	3,747.20	28,018.55

LABORATORY

	1910	1911
Medical examinations	3,785	4,227
Chemical milk examinations	3,679	8,256
Bacteriologic milk examinations	70	1,487
Cream and ice cream examinations	0	65
Water examinations	27	214
Miscellaneous foods and special analyses	0	108
Total examinations	7,651	14,357

PREPARATION FOR THE OWEN BILL

The active campaign in Cincinnati for a non-partisan board of health drew the attention of the citizens to the value of effective health administration. You may believe that our representatives in Congress will be found supporting the Owen bill. Our congressmen know the public's attitude in Cincinnati and they will show no fear or favor when the bill is at issue. Were such preliminary local effort and accomplishment more general there would not be the situation that now exists in Washington. In their efforts to pass the Owen bill the profession is being forced to overcome the protestations of a horde of moneyed lobbyists, agents of greedy "big business" whose sale of impure foods or drugs may be threatened. They must also overcome the influence of those parasites of the poor unfortunate and sick — the patent medicine fakers. These pirates are viciously but adroitly aligned and befronted with that misleading and misbranded organization, the League for Medical Freedom. When the American people come to recognize the evil of decentralization of health control, when they understand the high purposes of a federal board of health, they will demand that they be protected by such a board. Unfortunately for the movement, the public does not understand how unnecessary was the terrible loss of life and property in San Francisco in 1900 and in New Orleans in 1905. Political control of health administrations, coupled with stupid business, cost thousands of lives and millions of dollars following uncontrolled epidemics of plague and yellow fever. We need the federal board to perfect local health administration; we need it to bring about intercity and interstate cooperation and coordination. If you desire then to engage in a national health propaganda, begin your education in your own home towns.

MEDICAL WORK AND SOCIAL SERVICE

Public health and charity work are closely allied. I believe the statement will go unchallenged that an intelligent physician, by previous training and service, is best qualified to consider social service endeavor from the broadest point of view, yet comparatively few are found in the ranks of the social workers who are to-day attempting to solve the many difficult problems that have arisen in congested cities. As a partial recognition of the foregoing fact, a new committee has been appointed which will make its report at the National Conference of Charities and Corrections in Cleveland in June. This committee reports on "The Relation of Medical and Social Work," and in its seven subcommittees will consider this interrelationship under the following topics: hospital social service; visiting nursing; industrial diseases and accidents; infant mortality; blindness; insanity and epilepsy; tuberculosis, syphilis, hookworm and alcoholism; sex hygiene, including subject of sterilization.

The wide field of social betterment, with its medical, hygienic and economic background, is one that is familiar to the physician and rather difficult of comprehension by the lay social worker; and yet by a strange transposition of interest and affairs the lay mind, instead of the medical mind, is grappling with these problems. The same criticism might be applied to a large part of the social worker's program.

As further evidence of this I submit to you a few excerpts from a recently published statement by Sara E. Parsons of the Massachusetts General Hospital, an expert in the social service field, in which she attempts to outline for college women the necessary preparation for social work.

She first suggests that the college graduate, as a preliminary, become a graduate nurse, or, as an alternative, on the assumption that this graduate from a girls' college has studied anatomy, physiology, hygiene, bacteriology and chemistry, she ventures to outline a program in preparation for social work as follows:

Actual nursing	2 months
Obstetrics, infant-feeding, etc.	2 months
Child-nursing	2 months
Dispensary work, eye, ear, nose and throat	2 months
Dispensary work, tuberculosis, home visits	2 months
Dispensary work, nerve clinic	2 months
Field work	2 months

This involves a program of eighteen months of study, to which she would add one year in the theory of social service, all of which totals two years and a half of study.

Does not all this suggest that the profession is failing to cover a field of activity which is properly its own? Does it not indicate that the medical colleges should meet this demand of the new social order of things and supply the fraction which is lacking to make of their graduates social workers as well as physicians? Even if comparatively few entered the field, would it not so broaden the social outlook of the graduate as to make of him a better physician? The mere insertion of such a course, premedical or elective, would help materially in supplying the great demand of to-day for competent social service workers. There is even greater demand to-day for competent physicians, with a decent social outlook, to take administrative positions in charitable and social service work — the large offset to the ever-narrowing field of the physician resulting from preventive medicine. A few medical colleges have seen the need for a postgraduate course in preventive medicine, and in the near future we can hope to have a supply of trained men for health department work.

COOPERATIVE MEDICAL TEACHING

The Medical College of the University of Cincinnati has recognized the trend of public affairs and is better preparing its graduates to solve the problems of sanitation and hygiene in their respective communities. This university has established a cooperative course in preventive medicine by placing its students directly in the field of health department activity. In his junior year the student divides his time between active service in the board of health work and the regular work of the medical college. The groups of students are assigned to the health department to do chemical and bacteriologic work, examinations of milk, water, and testing for typhoid, tuberculosis and diphtheria. To this are added food, dairy and bakery inspections as well as school inspections and fumigation. In fact, every activity of the board of health is taken part in.

This cooperative plan of teaching hygiene and sanitation in the University of Cincinnati has proved valuable to the students as well as to the health department. It has stimulated better work on the part of the inspectors. The student becomes more interested in his work as he realizes the relative importance of facts and conditions observed. Thus the graduates of this college will come to realize the practical importance of municipal health work. They will be more useful advisers to the smaller communities in which they enter practice and will be most helpful in creating a spirit of cooperation between the medical profession and the medical health officer. As a result, greater progress will be made in preventive medicine and public health.

PRODUCT OF PUBLIC INSTITUTIONS

The physician enjoys the most direct approach to the public and it is his duty to crystallize a public sentiment that will be appreciative of the tremendous advantages of hygienic living. It is also his duty to lead the way in insisting that public institutions be conducted in a humane and intelligent manner. In viewing the problems of the city's dependents he readily supplies the scientific background. He should know of the neglect that is usual in the care of indigent adults in almshouses. He should appreciate the menace of the feeble-minded outside the confines of an institution. He recognizes some of the causes, at least, of insanity and could be helpful therefore in its prevention. He should be the court of last resort to determine the admission or non-admission of the sick and afflicted to institutions, and lastly, he should be best qualified to judge wisely the problems involved in child welfare work.

INDUSTRIAL HYGIENE AND THE PHYSICIAN

Leaving the field of public charity and institutional work, there is the almost undiscovered one of improving the industrial life and activities of the wage-earner. It remains for the physician to prove to the capitalist that shop sanitation is a factor in industrial efficiency and that it pays fully as well to conserve the health of the human operator, as it does to reduce the number of lost motions by "scientific management."

The capitalist must be shown (1) that industrial hygiene induces a better personal hygiene, which in turn energizes the employee; (2) that efficiency of mind is affected by home and shop conditions; (3) that its ultimate result will be to keep busy many a machine now idle because of the preventable illness of the employees manning these machines; (4) that a better appreciation of the value of good health for itself will alone raise the standard of efficiency of any workman; (5) that improved personal cleanliness and better health make for a greater self-respect in any individual and tend to improve his family relations; (6) that betterment of civic health makes for happier homes, and healthy and happy homes are fundamental structures on which the commercial advancement of any city must largely be built.

In business life the brains and the energy of the American have astounded the world. The more intelligent captains of industry are now busily at work helping to improve industrial conditions, and are thereby solving some of the social problems. In many factories social service departments are being instituted in charge of physicians. The machine-tool industry in Cincinnati was influential in having the board of education take over the continuation schools previously conducted by them in their plants and permanently incorporate them as a part of the school system. This same group of men also saw the wisdom of cooperating with the dean of the engineering department of the University of

Cincinnati when he proposed to establish the first cooperative course of engineering, in which the student spends one week in the university and the next week in the shops. Besides increasing the efficiency of the graduate, this plan has a social phase in that it enables the student to earn his living while getting his education.

THE MEDICAL MAN IN THE NEW SOCIAL ORDER

The physician to-day does not occupy the exalted position that I would covet for him, partially because of a false sense of professional etiquette which has kept him from taking an active part in political affairs. The physician whom the public has generally seen in public positions is the "political doctor"—a man of no high standards, moral or professional—and this man has substituted in the minds of the people his standards for those more ideal ones of the profession.

The criticism that I direct at the medical profession is born of the hope that the members of the profession may be awakened to a sense of their real power, their great influence, their moral obligation and their greatest opportunity, that of serving all the people. They must align themselves with the modern idea of community life: "the whole for every man, and every man for the whole."

The appeal is likewise born of the belief that this, the noblest profession, in so widening its scope, is serving itself best; in so doing it is coming back into its own heritage, that of enjoying the respect, the admiration and the unbounded confidence of the American people, without which we must fail in accomplishing our highest mission.

This democracy of ours offers to us possibilities for growth and extension of propaganda not enjoyed by the physicians abroad, where the profession and health officials are bound about by tradition, official life and red tape unknown to us. Our opportunities for progress are greater, our responsibilities and obligations are likewise the greater.

The medical profession, scientifically, is rapidly placing itself on a par with the profession of the older countries. We have the knowledge to take up the tasks of preventive medicine and sociology in this country, and the opportunity is ours. If we but supply the necessary interest and energy, public welfare work in its broadest and truest scope will go forward by leaps and bounds. There will grow alongside of it and directly out of it a higher sense of public duty, a more ideal and unselfish citizenship—a citizenship that will more fully realize its deep obligation to the medical profession; and in this mutuality of confidence and regard, the medical profession will take a new and higher place in the community and will receive rewards not yet dreamed of.

Physician, "know thyself"—know thy strength, thy power, thy scope; physician, "heal thyself" of a contracted vision as to thy field of usefulness. From the ranks of thy profession must be developed the true "social engineer" to lead in the present world movement for social improvement. This social engineer will find his life—the extension of the humanities; his hope—the prevention of life waste; his work—service to mankind.

1609 East McMillan Street.

ABSTRACT OF DISCUSSION

DR. C. HAMPSON JONES, Baltimore: I have voiced these views for some time, in a very limited sphere. In our annual report, I have insisted that the commissioners of health must largely become sociologists. That is particularly true in obtaining death-rates and the cause of death-rates, obtaining the birth-rates and the cause of the low birth-rates, the study of infant mortality, and so on, by taking special census of the cities into which you go; but you can inject the social workers directly connected with the health department, or members of independent organizations that can and will work in harmony with the health department.

DR. M. P. RAVENEL, Madison, Wis.: I would be the last man to belittle the service of trained sanitary engineers. When they take the stand, however, that they are the only people who know how to run departments of health, they are like a man looking through a microscope, seeing one small field very much enlarged and losing sight of the rest of the specimen. There have been a few sanitary engineers who have made good health officers. I believe that without exception they have been in small cities. The splendid conduct of health matters we find in the state of Indiana is all due to a physician; the cities of Chicago, Detroit and Philadelphia were brought to the highest efficiency in health matters by physicians. I cannot think of any city or state in this country which has made any great advance that has not been under a physician as health officer. When you come down to the bottom, medicine is the foundation of all biologic and social training. What Dr. Geier says is exactly right, namely, the medical schools must keep up with the times; they must branch out a little. Everybody should read the brochure of Dr. Norman E. Dittman entitled "Education and Preventive Medicine," noticing especially the outline at the end of the book which he has given for a course in preventive medicine. At the University of Wisconsin, for several years past, Professor Ross has been advising his students to take medical bacteriology, in which course they get a good training in contagious and infectious diseases. Every social worker should have training in this sort of medicine.

While it is true that not many places are open at the present time for graduates in preventive medicine, they are increasing at a tremendous rate. We expect to graduate our first student with the degree of Doctor of Public Health this month, and already a place is waiting for him. We must educate the people to the necessity and value of preventive medicine, proving to them that it is the cheapest and best life insurance in which they can invest. As soon as business men realize this fact we will find all cities employing thoroughly trained health officers.

DR. J. N. HURTY, Indianapolis: Only the other day I happened on one of the works of Descartes. You know that Descartes was probably the most original mind of this later age; and certainly, he, more than any other thinker, has influenced modern speculative and experimental thought. He said that if ever the human race (he was not a physician) is to be raised to the highest practicable level, morally, mentally and physically, medicine would point the way. This, which was said over two hundred and fifty years ago, struck me as a very forcible and wonderful utterance. It is through hygiene that the human race is to be raised; it is hygiene that will finally purge the human race, as far as is practicable, of the terrible social diseases and of all of the other diseases which drag us down and which cost us so terribly. It seems to me there is no question about it.

Instead of believing that there is an oversupply of doctors of public health, I have decidedly the opposite opinion. We want this minute ninety-two doctors of public health in Indiana, for commissioners of public health in each of our counties. There is indeed a good market for them. At the University of Michigan, not long ago, I studied the requirements for the degree of Doctor of Public Health; I think that they are too high at the present time. They are ideal. We should aim at the ideal, but we cannot reach it all at once. I do not believe the universities will turn out enough doctors of public health to supply the Indiana demand for a long time, and I hope that the standard will not be placed so high that we may get a larger supply within a reasonable time. We cannot reach the ideal at one step.

DR. OTTO P. GEIER, Cincinnati: I hardly can emphasize any more definitely than I have the points at issue. The physician is forever turning aside the opportunities that are

presenting themselves to him in the social service field. We might well consider the economic phase of this question from the medical standpoint. We are reducing incomes in the profession 30 to 40 per cent. by medical preventive work, and we should plan to take care of the physician who has cooperated in reducing his work and thereby his income.

A METHOD OF SELECTION OF DONOR FOR BLOOD TRANSFUSION *

MORRIS FISHBEIN, M.D.
CHICAGO

The possibility of iso-agglutination makes the choice of a donor for blood transfusion an important matter. It has been shown that individuals fall into definite groups as regards this phenomenon, and only a person belonging to the same group as the patient who is to be transfused should be selected as donor. It is obvious that it is unsafe to transfuse with the blood of a donor whose serum will agglutinate the patient's corpuscles, or whose corpuscles are agglutinated by the patient's serum, and still more so when both these reactions occur. Cases with seemingly unfavorable results under these conditions have been reported by Schultz,[1] Ottenberg[2] and Hopkins.[3]

The following method may be used for carrying out such tests: So far as the blood of the donors to be tested is concerned, sufficient blood may be obtained from the ear; but in the case of the patient it would be better to draw the blood from the median basilic vein of the arm in the usual way because more serum is required. Three drops of the blood are added to 10 c.c. of a 1 per cent. solution of sodium citrate in physiologic salt solution. In this manner approximately a 2 per cent. suspension of the blood is prepared, the citrate preventing coagulation. The remaining blood is poured into a centrifuge tube and allowed to clot. With a clean needle the clot is loosened from the side of the tube and the tube centrifuged for a few minutes to obtain an upper layer of absolutely clear serum. This completes the preparation of material, with the exception of the plate which is now to be described and which has been found to be very serviceable. On an ordinary piece of window glass, approximately 3 by 4 inches in size, which has been washed absolutely clean with water and ether, ten small circles are made with melted paraffin, assuming that a choice is to be made among five donors. If the melted paraffin is drawn up into a medicine-dropper, the circles are quickly made with the tip while gentle pressure is exerted on the bulb. Ten circles may be made with one medicine-dropper full of melted paraffin. In this manner ten paraffin cups are made, each of which will hold at least 4 drops. The circles are made in two rows of five each. In each cup in the first row is placed 1 drop of the suspension of the patient's blood, and in each cup in the second row are placed 2 drops of the patient's serum. To Cup 1 in the first row are added 2 drops of serum of Donor 1, to Cup 2, 2 drops of serum of Donor 2, etc. To Cup 1 in the second row is added 1 drop of the blood of Donor 1, and to Cup 2, 1 drop of the blood of Donor 2, etc. There are therefore required in such a set 5 drops of patient's blood suspension, and 10 drops of patient's serum, and 1 drop of each donor's blood suspension and 2 drops of serum. With a narrow glass rod the fluids are mixed thoroughly, the rod being washed in citrate solution and wiped after each mixing. In practically all instances, iso-agglutination when present becomes visible macroscopically after half an hour at room temperature; the mixture can be inspected easily under the microscope also. It is obvious that in testing for iso-agglutination in larger groups, as in twenty, the greatest advantage is to be derived from this method. It has seemed so simple and easy of performance in comparison with other methods that it was thought best to make a brief report of it.

* From the Memorial Institute for Infectious Diseases.

1. Schultz: Ueber Bluttransfusion beim Menschen unter Berücksichtigung biologischer Vorprüfung, Berl. klin. Wchnschr., 1910, xlvii, 1407.
2. Ottenberg: Transfusion and the Question of Intravascular Agglutination, Jour. Exper. Med., 1911, xiii, 425.
3. Hopkins, J. Gardner: Phagocytosis of Red Blood-Cells After Transfusion, Arch. Int. Med., September, 1910, p. 270.

THE PALLIATIVE TREATMENT OF TERMINAL LARYNGEAL TUBERCULOSIS *

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The palliative treatment of terminal laryngeal tuberculosis is a thankful one. In private practice, much can be done by daily treatments to relieve the severity of the patient's sufferings, but in institutional work the problem is entirely different. In public hospitals, as a rule, it is unusual to have a trained laryngologist constantly in attendance. Therefore the questions arise what practical methods should be adopted for giving permanent relief from the laryngeal pain, and whether such methods could be put into the hands of the resident physician. Whether this problem has been solved can be determined by a study of the results obtained in the following series of cases.

The condition of these patients is such as to awaken our deepest sympathy. Doomed in a few months to die, with absolutely no hope of escape, their last moments are made miserable by continuous pains in the larynx, which are present not only during the ingestion of food, but even when the larynx is in a condition of rest. The taking of solid food is an impossibility; and even the swallowing of water or milk produces such an agony of suffering that slow starvation is generally preferable.

Local applications of cocain, frequent insufflations of propaesin, anesthesin or orthoform, local cauterization with lactic acid, can all be used with marked benefit to the patient. As a usual thing, however, these measures give only temporary relief and in addition consume so much time as to make them impossible to be thoroughly carried out in a hospital of several hundred beds.

In the cases which are not too far advanced, the patient can be instructed in methods of auto-insufflation, but in the bed-ridden patients, in whom the suffering is the most intense, local methods have been found to be of very little benefit.

It occurred to Rudolf Hoffman, of Munich, that some form of permanent anesthesia of the interior of the larynx would prove an unbelievable blessing to this class of poor unfortunates. The brilliant results in superficial neuralgias, which followed Professor Schlösser's original communication on the use of alcohol injections in these conditions, gave him the clue, and he saw that by injecting the superior laryngeal nerve such an anesthesia might be brought about. Already Braun and Frey, by means of cocain injections in the region of

* Read before the San Francisco Polyclinic Society, June 5, 1912.

the ramus internus of the superior laryngeal nerve, had secured anesthesia sufficient to carry out small laryngeal operations.

The emaciation which is usually an accompaniment of tuberculosis in the latter stages makes it particularly easy for this procedure to be carried out successfully. The point of entrance of the nerve through the thyrohyoid membrane can be palpated with great exactness. The technic of making the injection is as follows: The skin is first prepared by painting the region to be injected with iodin. The left side of the larynx is grasped with the first and second fingers of the right hand, and with the thumb of the same hand the painful point is located. As soon as this spot is found the thumb-nail is pressed in to mark the spot and the needle is introduced at that point. The needle is introduced perpendicularly for 1.5 cm.; then the point is moved in all directions until a sharp pain, radiating to the ear, is felt. From 3 to 5 c.c. of a warm solution of 85 per cent. alcohol are then injected until the pain in the ear disappears. The point of entrance of the nerve will be found just at the upper edge of the thyroid cartilage, about one-third of the distance from its outer edge.

In none of the sixteen cases reported by Hoffman, and certainly in none of my own cases, were untoward effects observed. In fact, it can be stated that the procedure is entirely without danger. The relief from pain is immediate, and aspiration of food as a result of paralysis has seldom been observed. The injection can be repeated without danger as often as necessary. The duration of the anesthesia varies from a few hours to as long as forty days.

To my mind one of the most important secondary effects of the injection is the mental effect on the patients. The immediate relief from pain gives them hope of rapid recovery; their spirits improve and they try to take more nourishment.

The great value of this procedure is undoubted, yet a study of the literature shows surprisingly few case series reported. The simplicity of the procedure, the ease of application, the permanency of the result, and, most important of all, the fact that the method can be used by any medical man or intern, make it a relief measure with which every man working with tuberculosis should be familiar.

The tabulated series of cases, studied at the San Francisco City and County Hospital for Tuberculosis, is especially interesting for several reasons, and as far as the literature shows, absolutely unique, in that only those cases were selected in which death was inevitable within a few weeks, and the sufferings of the patients were intense. The majority of the patients found the greatest relief from pain and surcease from their sufferings up to the day of their death. The negative results in three cases are self-explanatory.

The negative results in the series mentioned above, and in some subsequent cases in which the laryngeal involvement was not so marked, bring out one interesting point. If there is an involvement of the epiglottis, especially on the external surface, the relief from the injection is entirely absent in most cases, and only partially present in others.

TABLE SHOWING RESULTS OF ALCOHOL INJECTION IN TEN CASES OF TERMINAL LARYNGEAL TUBERCULOSIS

No.	Name	Sex	Age	Pulmonary Findings	Larynx Findings	First Injection	Condition Before First Injection	Relief After Injection	Days Relief	Later Injection	Condition Before Second Injection	Death	Total Days Relief
1	N.	M.	38	Very late cavity formation; daily fever.	Both cords and arytenoids deeply ulcerated; epiglottis free.	2/1/12 Both sides.	Continuous pain, night and day; increased on swallowing.	Immediate relief; freedom from pain; eating and mental condition improved.	30	Second, 3/2/12	Patient rapidly failing; mentally irrational; complains of some pain.	3/18/12	46
2	K.	M.	23	Same as Case 1.	Filled with pus and mucus; ulceration of arytenoids.	2/4/12 Both sides.	Continuous pain, night and day; solid food impossible; takes milk, one swallow at a time.	Great relief, lasting until death.	14	None.	.....	2/18/12	14
3	W.	F.	55	Same as Case 1.	Large ulceration of tongue and interarytenoid space; fungating granuloma of right cord; large ulceration of septum.	2/1/12 Both sides.	Sharp, racking, continuous pain, day and night; cannot drink milk or water except by single swallow.	Immediate, marked improvement; free from all pain; swallows easily; takes solid food; says relief is wonderful.	3	.....	Repetition of injection not absolutely necessary, but was made at request of patient; comfortable up to death.	3/3/12	31
4	C.	M.	25	Same as Case 1.	Large ulcerative process of cords and arytenoids.	2/12/12 Both sides.	Great pain on swallowing and between meals.	Immediate marked improvement; drinks an entire glass of milk.	31	3/15/12	Pain has returned last few days; patient wants second injection.	3/16/12	31
5	B.	M.	32	Same as Case 1. Tuberculosis of femur.	Slight infiltration of interarytenoid space; no ulceration.	2/28/12 Both sides.	Complains of constant hacking cough; no pain on swallowing.	Immediate relief from cough, which patient ascribes to injection (?).	10	.....	.....	4/24/12	‡
6	S.	M.	27	Patient *in extremis*; rapidly failing.	Filled with pus; regurgitates all food.	2/19/12 Both sides.	Constant pain on swallowing.	Relief claimed by patient, who is not rational; result considered doubtful.	..	Second injection refused.	.....	5/29/12	‡
7	H.	M.	47	Same as Case 1.	Great thickening of epiglottis; no view of larynx.	3/21/12 Both sides.	Burning pain on swallowing; can take no liquids.	Relief after forty-eight hours.	9	None.	.....	3/30/12	9
8	W.	F.	30	Same as Case 1. Weight 69 lbs.	Large ulceration of arytenoids; first exam. 3/6; no pain till 3/28.	3/28/12 Right side.	Pain on swallowing.	Relief immediate and lasted until death, April 11, 1912.	15	None.	.....	4/11/12	15
9	D.	M.	56	Same as Case 1.	Cords, arytenoids and epiglottis ulcerated.	3/19/12	Continuous and racking pain; demands relief by repeated injections.	Nerve not located by first two injs.; immediate, marked relief following third.	34	2nd, 3/28; 3rd, 4/11/12	.....	5/15/12	34
10	Y.*	M.	37	*In extremis.*	Extensive ulceration of cords and arytenoids.	4/4/12 Both sides.	Continuous racking pain.	Nerve not located; no pain in ears; no relief.	†	.....	.....	4/4/12	..

* Japanese. † Died day of injection. ‡ Relief from injection doubtful.

This fact was proved in one case in which the ulceration involved the internal surface of the epiglottis. Because of its low position it was thought inadvisable to amputate. Repeated alcohol injections were made both by myself and others without the slightest relief. Subsequent amputation of the epiglottis gave immediate and lasting relief. This is probably to be explained by the fact that the external surface of the epiglottis is innervated by the glossopharyngeus, while the internal surface is innervated by the superior laryngeal nerve coming from the vagus.

The severity of the cases can be appreciated by the fact that the longest period a case was under observation before death intervened was forty-six days; the shortest, three days. The relief in most cases was immediate and marked, lasting usually up to the day of death. Most of the patients requested a second injection and described the relief in the most exaggerated terms such as "marvelous," "wonderful," etc.

The accompanying table is self-explanatory. All of the patients were bed-ridden; none recovered. Although this procedure can in no sense be looked on as a curative measure, the marked relief afforded the patients puts it in a class by itself as a palliative measure.

In conclusion, it should be noted that the failures are, in the vast majority of cases, due to faulty technic. This can usually be proved at the time of the injection. If the patient does not complain of a sharp pain, due to a rubbing of the point of the needle against the nerve, the injection will probably be a failure. It is always well, however, when it has been impossible to locate the nerve by this method, to inject the alcohol, as the perineural infiltration will possibly cause enough anesthesia to help the patient greatly.

209 Post Street.

IMMUNIZATION IN PNEUMOCOCCUS INFECTIONS *

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The formation of antibodies in those infections due to bacteria which produce little or no soluble toxins is held to be due to the stimulus of the whole bacterium in question. Intoxication and immunization are held to be due to the same cause. The idea that there are produced during infections substances purely toxic in nature which do not call forth an immunizing response, but which may even interfere with the proper formation of antibodies in response to certain other substances, has not been considered by most investigators.

In this paper I wish to present briefly the results of immunization experiments in animals and the results of the treatment of lobar pneumonia in man with various products obtainable from pneumococci.

The opsonic content of the serum in lobar pneumonia has been found to be below normal during the early part of the disease, but well above normal as the symptoms subside. In those patients who die from overwhelming infection it remains persistently below normal. In experimental pneumococcus infections the opsonic curve runs a similar course. When pneumococci killed by heat are injected there is first a reduction and then an increase in opsonin practically similar to what occurs during an infection. The opsonic content of the serum for pneumococci may therefore be looked on in a general way as an index of resistance.

When highly virulent pneumococci are allowed to autolyze in sodium chlorid solution there appears at a certain period a highly toxic substance. This, when injected intravenously in guinea-pigs, rabbits and dogs, produces symptoms characteristic of anaphylaxis in these species, and when injected subcutaneously in man produces a moderate increase in opsonins after a short negative phase, rather marked local reaction, leukocytosis and some fever. These extracts call forth reactions in man similar to those caused by the heat-killed bacteria. The pneumococci after extraction or autolysis lose the ability to retain the Gram stain, show varying degrees of disintegration, and when injected into animals and man exert little or no toxic action, but induce a prompt rise in the opsonic power of the serum without a preceding negative phase. By injecting large enough doses of a combination of the toxic material and the autolyzed pneumococci I have been able to produce a continuous negative phase similar to that observed in overwhelming pneumococcus infections. The mechanism of immunization seems paralyzed. In this connection it should be pointed out that the action of the toxic material obtained by autolysis of pneumococci is exactly similar to that which I have found in various pneumococcus exudates, such as the peritoneal exudate in pneumococcus peritonitis from the consolidated lung in pneumonia, from pneumococcus empyema pus, etc. The appearance of the toxic material in pneumococcus extracts and its disappearance have been found to be associated with proteolysis. The toxicity of the extracts may be temporarily restored by the addition of serum, but not by a second addition of serum. It has been found that intravenous injections of heat-killed pneumococci, of pneumococcus extracts during the toxic stage and after the toxicity has disappeared, of pneumococcus broth-culture filtrates and of autolyzed pneumococci render guinea-pigs resistant to subsequent injections of toxic autolysates in two, four, six, twenty-four and forty-eight hours, respectively. Salt solution, broth and extracts of typhoid bacilli, on the other hand, do not render guinea-pigs refractory to toxic pneumococcus autolysates. The reaction seems to be specific. The facts that the extracts after they have lost their toxicity and that autolyzed pneumococci which are non-toxic call forth reactions which render guinea-pigs resistant to such highly toxic material speak in favor of the view that intoxication is not essential in this process, but without further proof we could not be sure but that a certain amount of intoxication follows even these non-toxic injections.

The highly toxic substance in pneumococcus autolysates has been found to be soluble in ether. This serves to separate the toxic substance from the protein constituents of the autolysate. The ether-soluble material produces symptoms in guinea-pigs exactly similar to those observed following the injection of the autolysate itself, but fails to render the animals insusceptible to subsequent injections of both the toxic autolysate and the ether-soluble portion. We have here then an example of intoxication by a bacterial product which does not call forth an immunizing response. Moreover, the protective value against experimental pneumococcus infections in the guinea-pig and rabbit, of heat-killed pneumococci and of pneumococcus extracts before the toxic stage has been reached has been found to be distinctly less than that of large doses of autolyzed pneumococci

* Read in the Section on Practice of Medicine of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.
* From the Memorial Institute for Infectious Diseases, Chicago.

and autolysates after the toxicity has disappeared. The immunizing substances seem to be present in relatively larger amounts. The protective power is greater in the antigens from which the toxic substance has been removed.

For the treatment of lobar pneumonia so far chiefly the autolyzed pneumococci have been used.

A study by the statistical method during the past two years at the Cook County Hospital has shown a definite reduction in the mortality of the 130 treated cases. The number of patients treated, however, is too small to allow definite conclusions to be drawn; but when we consider that the patients that have been treated in this way belong to the most unfavorable group it looks as if this antigen really was of definite value.

Recently the effect of the non-toxic autolysate has also been tested. The seemingly beneficial effect in individual cases especially when the injection was made early has been very striking and it is proposed to carry out a study of this mode of treatment by the statistical method.

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ABSTRACT OF DISCUSSION

DR. G. A. WARREN, Black Rock, Ark.: What has been said regarding typhoid immunity, I believe, admits of no argument. I have not followed so carefully as has Dr. Rosenow the work on the opsonic index, but I have followed with care the clinical manifestations after the immunizing treatment of those who have been subjects of pneumonia, particularly after having gone through an experience with an epidemic of this disease in our part of the country. Not only did I use this treatment for immunizing purposes, but I used it in the treatment of the patients themselves, those who had not been given the immunizing doses, but who developed the disease. Did the immunity to which Dr. Rosenow referred occur among guinea-pigs alone, and how long was the immunity supposed to last, if at all? An attack of pneumonia, as we all know, establishes an immunity for a very short time, and contrary to other infectious diseases, after the period of immunity has passed the person is now liable to subsequent attacks of the disease. This has been our teaching and has been warranted by observation. I have followed, I think not less than thirty-seven cases which seemed typical, beginning with chill, fever and so forth, and which have been placed under this treatment. The treatment of these cases alone, would not amount to much in establishing the remedy were they not corroborated by other investigators. Instead of the classical crisis that occurs in lobar pneumonia, we find a gradual disappearance of the disease by lysis and a milder termination of the disease than is common. I have been led to believe that immunizing is what we all have been looking for, but after the disease is established, vaccines or antigens should be used as treatment, together with our medicinal "standbys," as we get a shorter duration of the disease and a much milder and quicker termination.

DR. SOLOMON SOLIS COHEN, Philadelphia: In using the latest introduction, namely, toxins derived from pneumococcus cultures, the organisms are killed, the cultures filtered, and with this filtrate there are mixed like products of other organisms, chiefly streptococcus and staphylococcus in definite proportions. Carefully used, the substance has not seemed to do harm, which is the first and most important question; the second, it has seemed to promote resolution in some cases of delay after symptomatic recovery under treatment with injections of quinin and urea hydrochlorid. I have several times called attention to the great value of these massive injections of quinin carbamid in overcoming the pneumonic toxemia, but in a certain number of cases, after the toxemic symptoms disappear, resolution is slow, probably because the treatment saves life in patients who would otherwise go unresolved to the grave. In a few (four or five) such instances, I have used these toxic filtrates and the results have been striking. After an intravenous injection the temperature will shoot up 4 or 5 degrees, and there is marked rigor; then, within a few hours there occurs an actual crisis during which the patient may become cyanotic and sweat profusely, the blood-pressure and the pulse falling as well as the temperature; and all of these may fall far below the normal line. When one sees this the first time, one may be alarmed lest the patient go into collapse. The functions, however, soon return to normal and the patient professes increased comfort. Resolution is apparently given a fillip by the disturbance. When the toxic filtrate is used intramuscularly the reaction is less pronounced, and the intravenous injection later is better borne. I am always in readiness to meet danger, however, with camphor, epinephrin, heat, strychnin, atropin, or whatever may be indicated.

Secondly, I have also used the pneumococcic and mixed bacterins (vaccines, so called), the suspensions of killed bacteria to promote resolution, and in a few cases, from the beginning. The results in the latter group are perhaps not quite so favorable as with the quinin and urea; but I can confirm Dr. Warren as to termination by lysis instead of crisis. The same thing happens when the quinin and urea salt is used early; hence I consider it an antitoxic. I urge on those who have the opportunity to observe patients under suitable conditions that in selected cases they make careful trial of bacterial products. By suitable conditions, I mean that the patients shall be under the constant observation of dependable interns and trustworthy nurses in hospitals. The methods are not at present suited to the conditions of house practice or even of indiscriminate hospital routine.

DR. DELANCEY ROCHESTER, Buffalo, N. Y.: According to Shattuck's analysis of the cases of pneumonia that have been treated in the Massachusetts General Hospital between the years 1889 and 1912, the death-rate was about the same as during the last 100 years by the various methods of treatment employed. I speak of this because I have been very much impressed with Dr. Rosenow's work. This work I have been following carefully in the literature. It holds out to us a definite advance in method of treatment. There is no doubt that a careful study of the use of the antibodies in the treatment of these cases will be of great value to us.

DR. JOHN A. LICHTY, Pittsburgh: I wish here to present a temperature curve of a typical case of pneumonia affecting successively two lobes, and should like to ask Dr. Rosenow when he would expect a change in this curve from the use of the serum treatment, and in what part of the curve he would expect the change, and what change would he expect? I had under observation a child 12 years of age, with typical lobar pneumonia at the right base. In four days the middle lobe became affected, but there was no change in the temperature curve. At the end of the tenth day the lower lobe cleared up and the temperature dropped to the normal. Four days later the middle lobe cleared up and the temperature went down to subnormal. No doubt something occurred in the system which kept the temperature lower at one period than at another. During the second lobe involvement something had happened between these two points which kept the temperature down. Does Dr. Rosenow use his treatment also as a prophylactic? We are all besieged daily by exploiters who offer us all sorts of serums and most of us are at a loss to know just what to do. We depend, therefore, on such statements as Dr. Rosenow has given us to set us right.

DR. E. C. ROSENOW, Chicago: I think it is well known that the immunity following attacks of lobar pneumonia is very short; the ability to produce these antibodies in the serum which can be transferred to the human is practically impossible and, for that reason, we hoped to do good in these cases of lobar pneumonia by relying on some form of active immunization—some product of the organism itself. I believe that in a disease like pneumonia the final proof of how much good really results from treatment is statistical. We all know that there are cases of this disease that run only two or three days; then there are cases that begin with great severity. I am not willing to accept the study of any one particular case as a final proof. I am very hopeful of what I have

offered you but just exactly what its value is going to prove to be I do not know. I have seen harm done by the treatment referred to by Dr. Cohen. I have seen two sudden deaths at least which followed the collapse Dr. Cohen referred to. We have no right to inject toxic substances and bacteria which are not already present in the individual. It is fundamentally wrong. It may be that lobar pneumonia is a mixed infection; I do not know; but I believe that it is a pneumococcic infection, pure and simple, in ninety-nine out of 100 cases and we should not be permitted to inject in such patients toxic substances that are derived from other bacteria than the pneumococci. We should give some immunizing substance that is not toxic. Some of these substances are very toxic to animals producing sudden death in many instances. What right have we to use these toxic substances on human beings?

With regard to the course of the temperature curve, especially that following the injection of antibodies, it should be remembered that those things that are soluble in salt solution, when injected, usually produce a very pronounced reaction. In the treatment of thirty-five proved cases of pneumococcus infection there has not followed a death; all the patients recovered and not one of them ran the course expected of him. The disease seemed to have been cut short, some more strikingly than others. What has been referred to about autolysis in pneumonia holds true in this disease as in others.

I have been accused of being foolish in advocating the use of these substances. After the injection of these soluble materials, after the toxic substances have been removed, when the injection is made early in the disease, there is first a slight rise of temperature, sometimes a chill, but usually not. If a chill does follow, it is due to some toxic substance that has been injected. The temperature usually falls by lysis.

A HOME-MADE ANTISEPTIC THERMOMETER CASE

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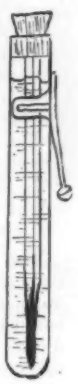
In a recent issue of THE JOURNAL,[1] I saw an account of a thermometer case which provided a plug of cotton saturated with formaldehyd solution. For those who wish to supplement washing, with entire submergence in an antiseptic solution of the area formerly in the mouth of the patient, I offer the following:



The case is a common ignition tube of heavy glass, 1 cm. in diameter and 11 cm. in length. The end of the thermometer is thrust into a soft-rubber cork, and a fountain-pen carrying clip slipped over the outside of the tube. For solution I use 50 per cent. alcohol.

The entire case is no larger than a fountain pen, is quicker than the screw and chain case to put in action, bathes the entire length of the thermometer, does not leak or have an objectionable odor and is immensely appreciated by patients.

2952 College Avenue.

1. GROS, E. L.: An Antiseptic Thermometer Case, THE JOURNAL A. M. A., June 8, 1912, p. 1756

Therapeutics

THE CARE OF INFANTS

(Concluded from page 721)

DIARRHEA

There seems to be in artificial feeding of infants two forms of bowel upset; the first is that of fermentation, with watery movements, due to too much sugar in the food. This condition is cured by removing the sugar from the diet and administering fat and lime in proper proportions. The second form is that in which the stools are dry and soapy, and is cured by temporarily stopping the fat, pushing the carbohydrate and giving malt-sugars and malt-extracts.

Angelia M. Courtney[1] has made a study of the casein curds in infant stools, and concludes that the hard or casein curds represent remnants of food, principally of a protein nature, that have escaped digestion; that the exact mechanism of their formation is not known; that they represent imperfect digestion; that they are not pathognomonic of any pathologic condition; that the loss of nutriment to the child is slight; and that their presence in the stools should not be a strong factor in the decision as to whether the child's food is correct and the child properly nourished. Brennemann[2] believes that these curds appear in the stools only after the feeding of raw milk, and that the curds disappear when boiled milk is substituted.

In the treatment of the diarrheas which show intestinal disturbance during artificial feeding, the various rules laid down by the different pediatricians, all equally successful, show that it means only the proper relation of the elements of the nutriment in the particular child.

Dr. John L. Morse[3] discusses Finkelstein and Meyer's findings that casein causes no disturbances in digestion and that fat and sugar have no pathologic action unless the intestinal functions have been injured. They believe that sugar is the special and primary cause of fermentation, and with fermentation they would advise the diminution of the quantity of sugar and increase in the casein, and sometimes an increase in the amount of fat. After the digestion improves they would then administer a little very assimilable carbohydrate. The *Eiweissmilch* which these investigators advise is prepared as follows:

EIWEISSMILCH

Heat 1 quart of whole milk to 100 F. Add four teaspoonfuls of essence of pepsin and stir. Let the mixture stand at 100 F. until the curd has formed. Put the mass in a linen cloth and strain off the whey from the curd. Remove the curd from the linen cloth and press it through a rather fine sieve two or three times by means of a wooden mallet or spoon. Add 1 pint of water to the curd during this process. The mixture should now look like milk and the precipitate must be *very* finely divided. Add 1 pint of buttermilk to this mixture.

Finkelstein and Meyer use buttermilk in the preparation of this food for the following reasons: (1) because of the small amount of milk sugar which it contains; (2) to obtain the good effects of the lactic acid, and (3) because buttermilk can be kept for a long time.

The composition of this food is:

Fats	2.5 per cent.
Sugar	1.5 per cent.
Protein	3.0 per cent.
Salts	0.5 per cent.

One quart of this milk contains about 370 calories.

They used this food in a great variety of conditions accompanied by diarrhea, and in their original paper claimed good results in all, but not in the new-born.

The general principles laid down by them for the use of this food in these conditions are as follows: a preliminary catharsis, if necessary, followed, or not, by an initial period of starvation and tea diet, as the case may be; small amounts of casein milk; larger amounts of casein milk; the addition of some carbohydrate other than milk-sugar or cane-sugar, preferably some dextrinized preparation of malt-sugar. They claim that the loose, green stools are quickly replaced by typical soap-stools and that the addition of malt-sugar does not cause a recurrence of the symptoms of fermentation. They call attention to the fact that on account of the low nutritive value of

1. Courtney, A. M.: Am. Jour. Dis. Child., 1912, iii, 1.
2. Brennemann, J.: Am. Jour. Dis. Child., 1911, i, 341.
3. Morse, J. L.: Am. Jour. Dis. Child., 1911, ii, 366.

the food there is certain to be a loss of weight in the beginning of the treatment. This is followed by a stationary period; then, when the amount of food is increased and carbohydrates added, by an increase in weight. They found that babies could be kept on this food for months and continue to thrive.

It has been shown that milk-sugar causes diarrhea much more easily than dextrin-maltose mixtures, which are generally well borne. It has also been shown that withdrawal of all sugar diminishes the secretion of the ferments necessary for the metabolism of sugar. The axiom of this scientific finding is that when sugar is again begun after complete withdrawal, only small amounts should at first be administered.

Morse concludes his paper with the statement that he believes the method of withdrawing lactose and raising the percentage of casein followed by the addition of dextrin maltose is the most valuable one in the treatment of intestinal disturbances of infants. He also believes that as soon as the digestion is improved the child should be put back on its ordinary diet.

Dr. J. M. Brady[4] reminds American physicians of the milk nutritional disorders described by Czerny and Keller. The symptoms of this disease as described by these writers and translated by Brady are as follows: They develop gradually, and are often overlooked by the mother. If the baby is regularly weighed, the weight-curve will be found irregular; first no gain, then a slight gain; the lack of gain is often in spite of the fact that the caloric value of the food is increased. Then the amount and strength of the food is increased, and in spite of this the child begins to lose weight and becomes pale; the skin loses its elasticity; the muscles become soft and flabby, and the child is restless, peevish and sleepless. The abdomen becomes distended and vomiting sometimes occurs. The stools are characteristic; they become gray, or grayish-white, dry, do not soil the napkin, and are frequently of foul odor. The dryness of the stool is due to lack of water, and the stool is composed largely of insoluble soaps, which soaps cannot take up water. The reaction of the stool is alkaline. If dyspepsia and intestinal infection occur, the stools then become more watery and acid. If proper treatment is not soon instituted, such little patients become marasmic.

These writers believe the cause of this metabolic disturbance is that there has been too much fat in the baby's food, at least too much for the particular baby. They do not believe bacteria have anything to do with the condition. Increase in the proteins brings about no change in the condition. The diminution of fat or an increase in the carbohydrate causes improvement and disappearance of the soap stools.

Finkelstein believes that this condition may be due to an excess of fatty acids combining with calcium and magnesium, with the result that there is formed a much larger amount of insoluble calcium and magnesium soaps than is normal. It has also been found that in these digestive disturbances there is a condition bordering on acidosis and there is an increase of ammonia salts in the urine. The administration, however, of alkalies does not help the child until the mistake in the diet has been remedied. Nevertheless alkali is added in the recommended treatment, namely in what has been termed "Keller's malt soup." This malt soup is asserted by the authors almost invariably to cause recovery of the babies who have this milk nutritional disorder. Brady believes that this food has the greatest value when the baby is more than 3 months old, and the baby must also have a good carbohydrate tolerance.

4. Brady, J. M.: THE JOURNAL A. M. A., March 16, 1912, p. 751.

KELLER'S MALT SOUP

It is prepared as follows:

Two ounces of wheat flour are mixed with 11 ounces of whole milk and then passed through a sieve. In a second vessel 3 ounces of extract of malt are mixed with 20 ounces of warm water. The two mixtures are then poured into a porcelain vessel, 2½ drams of 11 per cent. carbonate of potassium added, and the whole cooked with constant stirring for twenty minutes and then brought to a momentary boil; any loss through heat is made up by the addition of boiled water.

This mixture has a formula of fat 1.20, protein 2.00, carbohydrates 12.00, and has a caloric value of 800 to the liter. The above is designed for babies with a body-weight of from 6½ to 10 pounds from the third month to the ninth month. For babies under 3 months old the flour is reduced to 1 ounce and the malt extract to 2 ounces. It must be kept on ice and warmed before being fed. It has a sweet, pleasant taste and is taken greedily by all infants.

VALUABLE SUGGESTIONS

Some facts for the determination of the welfare of an infant the first three months of its life are well presented by Dr. F. C. Neff,[5] whose observations are based on the study of a hundred infants, all artificially fed. Some of his conclusions are as follows:

1. The temperature of an infant should always be taken by the rectum. Neff believes that an infant's normal temperature in this region is 98.6 F. He believes that even a temperature of 99 is suspicious and should be regarded as pathologic.

2. There is no advantage in peptonizing the milk for new-born babes, but it is occasionally beneficial in older infants.

3. Buttermilk is a useful food in some cases, even in the first weeks of life, and it should be tried in cases of fat intolerance and in enterocolitis.

4. Some infants show increased weight when fed on skimmed milk, which when suitably diluted can be made the basis for fat and sugar additions.

5. Malt soup is the food that in his experience proved the best milk preparation.

6. Casein milk has a useful but limited field in catarrhal enteritis.

7. Maltose answers all the requirements for a sugar in infant feeding.

CARE OF THE TEETH

The mother should be carefully instructed to cleanse the child's teeth gently with a simple alkaline mouth wash, and, perhaps, a soft brush, at least twice a day, better three times a day. Nothing is better than a simple dilute milk of magnesia. Care should be taken not to rub or irritate the tender gums, but it is well to remove all particles of milk from the mouth, especially after a number of teeth have erupted. Acid decomposition in the mouth is one of the causes of early decay of teeth.

CONSTIPATION

If the child, in spite of the diet being as near proper as possible, becomes constipated, the simplest addition to its food, whatever it may be, is probably a milk of magnesia. It also adds, many times, a necessary alkali to a milk food. While lime-water may often be of value, it is also more or less constipating. A good milk of magnesia, besides preventing the formation of large curds, if cow's milk is the food, also acts as a gentle laxative. The amount and the frequency in twenty-four hours depend entirely on the results.

5. Neff, F. C.: THE JOURNAL A. M. A., Dec. 23, 1911, p. 2068.

Special Article

TENTH ANNUAL SUMMARY OF FOURTH OF JULY INJURIES

This week, for the tenth consecutive year, THE JOURNAL presents statistics of deaths and injuries resulting from the celebration of the Fourth of July, with particular reference to tetanus, or lockjaw, resulting from these injuries. With the rapid decline in the number of casualties in the last few years, instead of relaxing its vigilance THE JOURNAL has made extra effort to secure complete and accurate data. Very significant is the fact, however, that a large majority of the blanks were returned from hospitals bearing the statement, "No cases treated this year," or "This city had a sane Fourth." From others the lists had but a few names whereas in previous years the pages were filled. Our thanks are due to health officers, hospital superintendents, physicians and others for the careful reports which have made these statistics practically complete and the figures fairly reliable. The data are presented in the same manner as heretofore so that comparison with the figures of previous years may be made.

A SANE FOURTH MEANS A HAPPY HOME
WE HAD THE BEST TIME WE EVER HAD THIS YEAR!
YES SIR! AND NONE OF THE KIDS I KNOW GOT HURT!
AMERICAN MEDICAL ASSOCIATION REPORT OF 4TH OF JULY CASUALTIES
1912 KILLED 47
INJURED 947
1911 KILLED 57
INJURED 154
1903 KILLED 466
INJURED 3783
American Medical Association Cartoon Series No. 14
THERE WERE FEWER ACCIDENTS THIS YEAR THAN EVER BEFORE, BUT STILL TOO MANY-

FEWER CASES OF LOCKJAW

Only seven cases of tetanus were reported this year as compared with eighteen last year, seventy-two in 1910 and 150 in 1909. The returns this year encourage the hope that deaths from this needless cause will soon cease.

The ages of the lockjaw patients this year ranged from 8 to 15 years, and all but one were boys. In five cases the injury was on the hand; in the other two it was on the leg. The length of time between injury and death was from seven to ten days. The figures in parentheses (Table 1) give the number of days between the time of injury and the appearance of active symptoms of tetanus, varying from four to six days. In two cases antitoxin was said to have been used, but most unfortunately it was not employed until after the active symptoms of the disease had set in and this is almost invariably too late a period for its successful use. Tetanus antitoxin is chiefly valuable as a prophylactic and very few cases have been reported in which its use immediately after the injury has been followed by active symptoms of the disease. The list of tetanus cases is given in Table 1.

DISTRIBUTION OF TETANUS

The tetanus cases by states are shown in Table 2. Cases occurred in only six states this year as against ten states last year, eighteen states in 1910 and twenty-five states in 1909. One state, West Virginia, had two cases of tetanus this year, both occurring in the same city, Wellsburg. Other states having one case each were California, Indiana, Massachusetts, Michigan and Oklahoma. Illinois, Missouri, New Jersey, New York, Pennsylvania and Wisconsin, which heretofore have had so many cases reported, had none this year.

THE DEADLY BLANK CARTRIDGE

Blank-cartridge wounds, which have always been responsible for a large majority of tetanus cases, this

TABLE 1.—CASES OF TETANUS

Name.	Sex.	Age.	Cause of Wound.	Site of Wound.	Duration in Days*	Day Antitoxin was used.	Termination.
CALIFORNIA							
Chargin	M.	10	Bl. ctg.	Hand	(4) 10	4	D.
INDIANA							
Porter	M.	10	Bl. ctg.	Hand	7	..	D.
MASSACHUSETTS							
Peteciaire	M.	14	Bl. ctg.	Hand	(4) 10	..	D.
MICHIGAN							
Ronzani	M.	13	Bl. ctg.	Hand	..	..	..
OKLAHOMA							
Jones	M.	12	Bl. ctg.	Leg	..	..	D.
WEST VIRGINIA							
Bowman	M.	8	Bl. ctg.	Leg	(5) 8	5	D.
Miller	F.	15	Bl. ctg.	Hand	(6) 8	..	D.

* Figures in parentheses show incubation period.

TABLE 3.—RATIO OF TETANUS CASES TO BLANK CARTRIDGE INJURIES

Year.	Tetanus Cases.	Blank Cartridge Injuries.	Ratio.
1912	7	75	1:10.71
1911	18	185	1:10.28
1910	72	450	1: 6.25
1909	150	1,225	1: 8.17
1908	76	942	1:12.39
1907	73	606	1: 8.16
1906	89	979	1:11.00
1905	104	809	1: 7.78
1904	105	905	1: 8.62
1903	332	1,672	1: 4.27
Totals	1,026	7,848	1: 7.23

year caused all of the seven cases. With a full knowledge of this fact and of the awfulness of the deaths from lockjaw, it is entirely inexcusable if not actually criminal to tolerate further the use of blank-cartridge pistols.

As may be noted on comparison of the statistics of this year with those of previous years (Table 3), there is a significant ratio each year between the number of tetanus cases and the number of blank-cartridge wounds.

TABLE 2.—TETANUS CASES BY STATES

Comparison With Previous Years

	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912
Alabama	..	..	1	..	..	..	..	..	..	..
Arizona	..	..	..	..	1	..	..	..	..	..
California	2	4	4	3	1	..	2	1	2	1
Colorado	4	..	1	..	..	..	..	..	..	..
Connecticut	3	..	3	..	4	1	..	..	..	..
Delaware	..	..	1	1	1	..	2	..	..	..
Dist. of Col.	1	..	..	..	..	..	..	..	..	..
Florida	..	..	..	..	..	..	1	..	..	..
Georgia	..	..	..	..	1	..	..	..	..	..
Idaho	1	..	..	..	..	..	1	..	..	..
Illinois	49	15	20	16	12	12	20	10	3	..
Indiana	11	6	3	8	2	..	9	6	..	1
Iowa	14	2	3	4	4	1	1	1	1	..
Kansas	11	1	..	..	2	1	6	..	..	..
Kentucky	4	2	..	1	..	1	1	..	..	..
Louisiana	..	..	..	..	..	..	..	..	..	..
Maine	2	4	1	1	..	1	1	1	..	..
Maryland	1	..	1	1	..	..	2	2	..	..
Mass.	16	5	7	3	2	5	8	..	1	1
Michigan	20	7	9	4	4	2	11	11	2	1
Minnesota	15	2	2	2	2	..	..	..	..	..
Missouri	29	1	3	3	1	5	8	2	..	.
Montana	2	1	1	..	1	..	3	2	..	..
Nebraska	4	3	3	1	..	1	3	1	..	..
New Hamp.	2	..	..	1	..	..	1	..	..	..
New Jersey	8	9	3	10	8	10	19	9	2	..
New York	36	9	6	8	4	9	11	7	1	..
N. Dakota	..	..	..	..	..	..	..	..	..	..
Ohio	67	9	5	7	6	7	12	3	3	..
Oklahoma	1	..	1	1	..	1	..	1	..	1
Oregon	2	..	..	1	1	1	..	..	..	..
Penn.	82	17	12	5	7	7	10	11	1	..
Rhode Island	3	..	..	1	..	..	..	..	..	..
S. Carolina	..	..	..	..	..	..	..	..	..	..
S. Dakota	..	..	..	..	..	1	1	..	..	..
Tennessee	..	..	..	..	..	..	..	..	..	..
Texas	..	..	..	..	2	..	..	..	..	..
Utah	..	1	1	..	..	..	..	1	..	..
Vermont	3	2	..	2	2	..	..	..	..	..
Washington	2	2	..	..	2	4	4	1	..	..
W. Virginia	3	..	..	2	..	1	4	..	..	2
Wisconsin	10	4	12	2	3	5	9	3	2	..
Wyoming	..	..	..	1	..	..	..	..	..	..
Total	415	165	164	89	73	76	150	72	18	7
States having cases	30	21	23	25	23	20	25	18	10	6

TABLE 4.—CAUSES OF TETANUS CASES

Year.	Blank Cartridge	Giant Cracker.	Cannon.	Fire-arms.	Powder, etc.	Total.
1903	363	17	5	3	27	415
1904	74	18	5	1	7	105
1905	65	17	4	5	13	104
1906	54	17	1	7	10	89
1907	52	8	6	4	3	73
1908	58	5	4	3	6	76
1909	130	9	1	4	6	150
1910	64	2	..	5	1	72
1911	15	1	1	..	1	18
1912	7	..	..	..	..	7

A larger number of blank-cartridge wounds almost invariably brings also a larger number of cases of lockjaw. Do away entirely with blank-cartridge pistols, therefore, and lockjaw from the celebration of the Fourth of July will be practically abolished.

THE MORTALITY IN TETANUS CASES

Of the seven cases of tetanus reported this year, six, or 86 per cent., were reported as fatal as compared with 55 per cent. last year, 93 per cent. in 1910 and 84 per cent. in 1909.

TETANUS FROM INJURIES NOT CAUSED BY FIREWORKS

Besides the cases of lockjaw due directly to the use of fireworks, it is interesting to note also those occurring during the Fourth of July season which were due to penetrating wounds from other causes, such as nails or splinters, to crushing injuries, etc. Instead of a reduction in these cases this year there was an increase, forty-three cases being reported during this Fourth of July season, or fourteen more than last year, when twenty-nine cases were reported. The fact that tetanus germs were apparently fully as prevalent if not more so this year than in 1911 makes the marked reduction of cases from Fourth of July injuries all the more significant and gratifying.

TABLE 5.—CASES OF TETANUS FROM OTHER CAUSES

	1908	1909	1910	1911	1912		1908	1909	1910	1911	1912
Alabama	....	....	1	1	....	New Hampshire	....	....	....	....	....
Arizona	....	....	....	....	....	New Jersey	7	8	8	1	....
Arkansas	2	....	....	....	....	New Mexico	....	1	....	....	....
California	4	4	1	2	7	New York	17	12	4	2	4
Colorado	3	....	....	1	....	North Carolina	1	....	....	....	....
Connecticut	2	2	....	....	....	North Dakota	1	....	....	....	....
Delaware	2	1	....	....	....	Ohio	23	13	2	....	2
Dist. of Col.	....	....	....	....	....	Oklahoma	....	....	....	....	....
Florida	2	....	....	....	....	Oregon	....	1	3	....	2
Georgia	....	1	....	....	....	Pennsylvania	21	21	8	6	4
Idaho	....	....	....	....	....	Rhode Island	....	1	....	....	....
Illinois	17	18	7	6	10	South Carolina	....	....	....	....	....
Indiana	6	4	1	2	1	South Dakota	2	2	....	....	....
Iowa	2	7	3	1	....	Tennessee	3	....	....	....	1
Kansas	4	....	1	....	....	Texas	4	1	1	....	....
Kentucky	5	5	....	1	2	Utah	....	....	....	....	....
Louisiana	1	....	....	1	3	Vermont	....	....	1	....	....
Maine	....	....	....	....	....	Virginia	4	1	....	1	2
Maryland	3	....	2	1	1	Washington	2	....	....	....	1
Massachusetts	3	5	....	....	....	West Virginia	....	1	....	....	....
Michigan	4	5	1	....	....	Wisconsin	5	4	1	....	....
Minnesota	4	2	....	....	....	Wyoming	....	....	....	....	....
Mississippi	....	....	....	....	....						
Missouri	12	5	1	2	3	Total	166	128	47	29	44
Montana	....	....	....	....	....						
Nebraska	....	3	1	1	1	States reporting cases	29	25	18	15	15
Nevada	....	....	....	....	....						

TABLE 6.—CAUSES OF DEATHS NOT DUE TO TETANUS

Year.	Gunshot.	Fire from Fireworks.	Powder, Torpedoes, Etc.	Giant Crackers.	Cannon.	Other Causes.	Total
1905	37	22	6	5	7	17	95
1906	38	18	8	3	3	3	83
1907	20	31	13	13	3	22	102
1908	30	22	19	23	7	7	108
1909	17	37	16	7	7	6	90
1910	19	26	11	2	3	3	64
1911	11	12	9	2	5	8	47
1912	9	8	7	2	2	7	35

DEATHS AND INJURIES NOT CAUSED BY TETANUS

Besides the six deaths due to tetanus thirty-five persons were killed by various forms of fireworks, making a total of forty-one deaths, sixteen less than last year, ninety less than in 1910 and 174 less than in 1909. This is the lowest number of deaths from such causes during the ten years covered by THE JOURNAL'S statistics, and shows a decided improvement over previous years. This year nine persons were killed outright by firearms, seven by explosions of powder, bombs or torpedoes, two by cannon, two by giant firecrackers and seven by various causes, as blood-poisoning, explosions of chemicals, etc. There were eight victims also, mostly little girls, who were burned to death by fire from fireworks, some of these being the so-called harmless varieties, including very small firecrackers and sparklers. All accidents not due directly to the discharge or handling of fireworks or other means of noise production and dis-

play on or about the Fourth of July have been omitted. Table 6 shows a comparison of the causes of deaths aside from tetanus for the past eight years.

DISTRIBUTION OF INJURIES

In Table 7 will be found a summary of all injuries including tetanus and of all causes arranged by states. Beneath the totals at the bottom are given, for comparison, the totals for the nine previous years. The grand totals for the ten years are also given. Table 8 permits the comparison by states of the total deaths and injuries for ten years. The number of casualties shows a continuation of the remarkable decrease of the last few years, which unquestionably is the result of the efforts to secure more intelligent methods of celebration. This is evident from the fact that the most marked decreases in the last two years are in the states in which the agitation for restrictive measures has been strongest. For example, the total casualties in Illinois this year are thirty-nine as against 218 last year, 285 in 1910 and 546 in 1909; Massachusetts had forty-five casualties this year as compared with twenty-seven last year, sixty-three in 1910 and 430 in 1909; Ohio had only fifty-five casualties this year, as compared with 105 last year, 166 in 1910 and 323 in 1909; New York had 115 this year as compared with 237 last year, 327 in 1910 and 897 in 1909; Wisconsin had only thirty-eight this year as compared with fifty-two last year, 171 in 1910 and 157 in 1909. Even in Pennsylvania, which has had the largest number of casualties for each of the last five years, there has been a marked improvement, clearly the result of a powerful campaign which has been carried on in that

TABLE 7.—SUMMARY BY STATES OF JULY FOURTH CASUALTIES

Number.	States.	Deaths.			Injuries.						Total Persons Dead or Injured.	Causes of Tetanus Cases.		Causes of all Cases Aside from Tetanus Cases.					Number.
		From Tetanus.	From Other Causes.	Total.	Loss of Sight.	Loss of One Eye.	Loss of Legs, Arms or Hands.	Loss of Fingers, One or More.	Other Injuries.	Total Non-Fatal Injuries.		Blank Cartridge.	All Other Causes.	Blank Cartridge.	Fire Crackers.	Cannon.	Firearms.	Powder and Fireworks.	
1	Alabama								2	2	2				2				1
2	Arizona									1	1				1				2
3	Arkansas					1													3
4	California	1		1*		4	1	4	21	30	31	1		2	10	6	2	10	4
5	Colorado		3	3	1			2	15	18	21				13	2	1	5	5
6	Connecticut		1	1		2	1	3	23	29	30			9	3	6	7	5	6
7	Delaware								6	6	6				4	1	1		7
8	District of Columbia								2	2	2							2	8
9	Florida																		9
10	Georgia								28	28	28						6	22	10
11	Idaho								2	2	2						2		11
12	Illinois		3	3		2	1	1	32	36	39			4	9	3	15	8	12
13	Indiana	1	4	5	1	1	1		35	38	43	1		1	11	2	5	23	13
14	Iowa		2	2					22	22	24			2	14		2	6	14
15	Kansas							1	7	7	8				4	4			15
16	Kentucky							1	4	5	5				2		1	2	16
17	Louisiana								2	2	2						2		17
18	Maine																		18
19	Maryland								11	11	11			2	3	1	2	3	19
20	Massachusetts	1	1	2			1		42	43	45	1		1	20	3	4	16	20
21	Michigan		4	4	1	1		7	37	46	50	1			16	4	12	17	21
22	Minnesota						1		16	17	17				10	1		6	22
23	Mississippi								1	1	1							1	23
24	Missouri				1	1		3	52	57	57			4	20	5	13	15	24
25	Montana							2	4	6	6				3	1		2	25
26	Nebraska		1	1		1			10	11	12			1	6		2	3	26
27	Nevada																		27
28	New Hampshire								3	3	3			1				2	28
29	New Jersey		2	2	1	1			12	14	16			4	4		3	5	29
30	New Mexico																		30
31	New York		2	2		2	1	1	109	113	115			13	23	3	40	36	31
32	North Carolina																		32
33	North Dakota								2	2	2				2				33
34	Ohio		3	3				1	51	52	55			5	22	1	4	23	34
35	Oklahoma	1		1					10	10	11	1		1	4		2	3	35
36	Oregon						1		4	5	5				2			3	36
37	Pennsylvania		5	5	3	5	1	12	239	260	265			29	134	28	29	63	37
38	Rhode Island						1		1	2	2							2	38
39	South Carolina																		39
40	South Dakota																		40
41	Tennessee								12	12	12				1		8	3	41
42	Texas						2		1	3	3					2		1	42
43	Utah								1	1	1							1	43
44	Vermont							1		1	1							1	44
45	Virginia						1		1	1	1				1				45
46	Washington							2	10	12	12				3	1	2	6	46
47	West Virginia	2		2							2	2							47
48	Wisconsin		4	4				2	32	34	38				15	1	1	21	48
49	Wyoming								1	1	1							1	49
	1912 totals	6	35	41	8	21	13	43	862	947	988	7	0	70	262	75	157	317	
	1911 totals	10	47	57	8	26	30	83	1,399	1,546	1,603	15	3	170	484	114	184	633	
	1910 totals	67	64	131	7	33	26	114	2,612	2,792	2,923	64	8	886	1,050	212	229	974	
	1909 totals	125	90	215	16	36	41	176	4,823	5,092	5,307	130	20	1,095	1,614	427	341	1,580	
	1908 totals	55	108	163	11	93	57	184	5,115	5,460	5,623	58	18	816	1,793	399	481	2,058	
	1907 totals	62	102	164	12	75	37	237	2,868	4,249	4,412	52	21	554	1,489	207	502	1,528	
	1906 totals	75	83	158	22	72	56	227	4,931	5,308	5,466	54	35	925	1,690	408	532	1,822	
	1905 totals	87	95	182	25	106	80	221	4,562	4,994	5,176	65	30	744	1,775	474	494	1,675	
	1904 totals	91	92	183	19	61	61	208	3,637	3,986	4,169	74	25*	831	1,266	506	406	1,057	
	1903 totals	406	60	466	10	75	54	174	3,670	3,983	4,449	363	29†	1,309	1,152	397	236	363	
	Total for ten years	984	776	1,760	138	508	475	1,667	35,479	38,357	40,117	882	198	6,900	12,677	3,231	3,472	12,707	

* Kind of fireworks causing six tetanus cases unknown. † Kind of fireworks causing 24 cases of tetanus unknown.

state and particularly in Philadelphia, for more enlightened methods of celebration. That state had 265 casualties this year as compared with 442 last year, 623 in 1910 and 986 in 1909. Altogether there were only 988 casualties this year, 615 less than last year, 1,935 less than in 1910 and 4,319 less than in 1909. The total, however, is still by far too large and efforts at restriction should be continued.

NATURE OF NON-FATAL INJURIES

There were 947 non-fatal injuries this year, or 599 less than last year. Eight persons were totally blinded this year, twenty-one lost one eye each, thirteen lost legs, arms or hands, and forty-three lost one or more fingers.

TABLE 8.—TOTAL DEATHS AND ACCIDENTS BY STATES DURING TEN YEARS

	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912
Alabama	2	7	1	2	1	1	1	3	3	..
Arizona	1	..	4	5	2	5	3	..	2	2
Arkansas	..	..	3	4	..	5	1	4	1	1
California	100	138	142	96	121	136	89	63	43	31
Colorado	35	44	26	93	25	13	18	19	6	21
Connecticut	102	133	132	169	63	105	86	78	15	20
Delaware	1	5	14	8	16	12	13	8	3	6
Dist. Columbia	2	10	24	5	12	21	..	..	..	2
Florida	1	2	2	..	..	..	1	4	..	..
Georgia	..	..	..	4	2	4	..	5	10	28
Idaho	4	4	3	3	4	4	2	3	1	2
Illinois	366	423	542	598	468	558	546	285	218	39
Indiana	160	211	217	250	..	255	164	167	53	43
Iowa	168	137	328	255	231	174	91	141	54	1
Kansas	63	88	56	61	64	72	86	50	25	8
Kentucky	30	72	17	21	18	33	17	26	6	5
Louisiana	..	2	3	7	8	4	..	4	2	2
Maine	31	32	29	15	11	16	22	7	4	..
Maryland	21	22	13	10	23	21	10	8	13	11
Massachusetts	637	196	467	329	168	430	430	63	27	45
Michigan	144	157	288	193	163	203	177	143	69	50
Minnesota	157	102	174	95	95	65	69	64	17	17
Mississippi	..	..	..	2	2	1	..	..	1	1
Missouri	147	84	218	325	229	375	352	112	60	57
Montana	5	17	40	3	6	11	9	10	..	6
Nebraska	46	63	43	47	58	46	42	36	17	12
Nevada	..	1	2	..	1	4	..	1	..	..
New Hampshire	37	23	9	29	13	13	23	10	3	3
New Jersey	228	204	350	308	402	472	488	167	43	16
New Mexico	..	4	5	1	6	..	1	3	..	..
New York	522	549	566	681	752	647	897	327	237	115
North Carolina	..	..	1	1	..	..	..	1	5	..
North Dakota	10	8	29	11	8	13	4	13	1	2
Ohio	443	327	329	490	375	543	323	166	105	55
Oklahoma	1	3	7	14	194	9	12	11	9	11
Oregon	16	13	9	11	5	9	21	19	3	5
Pennsylvania	553	744	721	969	491	987	986	623	442	265
Rhode Island	61	30	11	21	39	39	42	19	11	2
South Carolina	..	..	..	1	..	..	4	..	1	..
South Dakota	4	10	15	5	8	10	9	4	2	..
Tennessee	4	1	5	6	4	5	4	10	3	12
Texas	2	2	4	11	7	11	4	2	..	3
Utah	23	22	25	18	30	12	18	8	2	1
Vermont	45	14	10	14	18	19	12	4	4	1
Virginia	..	11	5	8	..	5	..	..	3	1
Washington	21	25	15	25	22	38	32	37	22	12
West Virginia	19	16	34	64	27	29	35	20	2	2
Wisconsin	150	215	230	155	150	187	157	171	52	38
Wyoming	1	2	8	3	..	1	1	4	4	1
Totals	4449	4169	5776	5466	4413	5623	5307	2923	1603	988

Although there has been a marked reduction in the total number of non-fatal injuries, the totals of these more severe injuries are about the same as reported for the two years previous. The giant firecracker continues to hold the first place as a cause of lacerated wounds and is responsible for most of the losses of eyes, hands and fingers. This year 362 injuries including two deaths were due to the giant firecracker. Firearms caused 157 accidents this year including nine killed. Of the total number thus injured nearly half were orderly persons who were struck by stray bullets from the reckless use of firearms by others, and six deaths resulted. The use of cannon caused seventy-five injuries, including two killed. In the ten years, a total of 40,117 people—the equivalent of forty regiments—were killed or injured in the celebration of the Fourth of July!

TABLE 9.—NUMBER REPORTED KILLED AND INJURED IN THE LARGER CITIES

City.	Population Census of 1910.	1907		1908		1909		1910		1911		1912	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
New York City	4,776,883	22	422	11	316	7	559	6	179	3	91	1	58
Chicago	2,185,283	16	151	12	202	..	118	4	62	2	53	2	12
Philadelphia	1,549,008	7	248	6	426	9	508	4	405	..	294	2	127
St. Louis	687,029	3	189	4	229	4	163	..	44	..	38	..	48
Boston	670,585	3	59	6	190	5	167	..	35	..	3	..	16
Cleveland	560,663	3	68	12	93	..	4	..	1	..	5	..	1
Baltimore	558,485	..	5	1	10	..	5	..	6	..	10	..	10
Pittsburgh	553,905	10	88	..	30	5	48	6	26	1	25	1	14
Detroit	465,766	2	46	..	10	2	46	1	17	..	18	2	20
Buffalo	423,715	..	18	3	11	..	33	1	13	..	16	..	6
San Francisco	416,912	..	..	..	11	..	12	..	9	1	8	..	7
Milwaukee	373,857	2	93	..	70	..	78	3	112	1	19	..	24
Cincinnati	364,463	2	89	1	112	3	86	3	49	1	4	..	21
Newark, N. J.	347,469	1	129	2	81	1	150	1	15	..	..	..	..
New Orleans, La.	339,075	..	8	..	4	..	..	..	3	..	2	..	2
Washington, D. C.	331,069	..	12	..	21	..	..	..	..	..	..	..	2
Los Angeles, Cal.	319,198	..	35	..	40	..	26	..	..	..	4	..	5
Minneapolis, Minn.	301,408	..	13	..	10	1	24	..	20	..	..	..	..
Jersey City, N. J.	267,779	..	31	5	34	1	14	1	44	..	14	..	3
Kansas City, Mo.	248,381	1	46	..	55	4	67	1	25	..	4	..	1
Seattle, Wash.	237,194	1	3	..	11	3	10	..	7	..	..	..	2
Indianapolis, Ind.	233,650	1	31	1	14	1	23	..	24	..	5	..	6
Providence, R. I.	224,326	..	20	1	21	..	13	..	10	1	9	..	..
Louisville, Ky.	223,928	..	13	..	10	1	10	1	13	..	2	..	2
Rochester, N. Y.	218,149	..	12	..	10	..	5	..	10	..	4	..	2
St. Paul, Minn.	214,744	..	20	..	13	..	18	..	12	..	10	..	7
Denver, Colo.	213,381	..	8	..	13	..	12	1	6	..	1	..	7
Portland, Ore.	207,214	..	2	..	3	..	16	..	12	..	1	..	2
Columbus, Ohio	181,548	5	36	..	5	1	19	..	..	..	1	..	1
Toledo, Ohio	168,497	1	5	..	8	2	3	1	2	..	5	1	1
Atlanta, Ga.	154,839	1	4	..	3	..	..	..	5	..	10	..	28
Oakland, Cal.	150,174	..	9	..	..	..	8	..	9	..	1	..	2
Worcester, Mass.	145,986	1	6	2	20	1	42	..	6	..	1	..	10
Syracuse, N. Y.	137,249	..	20	..	14	..	13	..	6	..	1	..	4
New Haven, Conn.	133,605	..	2	..	..	..	15	..	..	..	1	..	6
Birmingham, Ala.	132,683	..	..	..	..	..	..	..	..	..	3	..	..
Memphis, Tenn.	131,105	..	1	..	3	..	4	..	2	..	..	..	2
Scranton, Pa.	129,867	..	5	1	17	1	29	..	6	..	10	..	..
Richmond, Va.	127,628	..	..	..	..	1	1	..	..	..	..	..	..
Paterson, N. J.	125,600	1	29	2	31	1	45	1	14	..	5	..	2
Omaha, Neb.	124,000	..	25	..	10	1	17	..	17	..	7	1	2
Fall River, Mass.	119,295	..	..	..	12	..	19	..	1	..	..	..	1
Dayton, Ohio	116,577	..	11	..	14	..	4	..	2	..	4	..	1
G. Rapids, Mich.	112,571	..	20	1	30	..	3	..	17	1	6	..	9
Nashville, Tenn.	110,364	..	2	..	..	..	..	..	8	..	2	..	10
Lowell, Mass.	106,294	..	23	..	..	..	18	..	..	1	3	1	..
Cambridge, Mass.	104,839	..	..	..	17	..	..	..	..	..	4	..	..
Spokane, Wash.	104,402	..	..	..	..	..	..	..	..	..	7	..	4
Bridgeport, Conn.	102,054	..	1	..	27	..	21	..	4	..	4	..	1
Albany, N. Y.	100,253	1	24	..	37	..	31	..	11	1	5	..	..
Hartford, Conn.	98,915	..	18	..	18	..	11	..	14	..	1	..	9
Trenton, N. J.	98,215	..	38	1	17	1	58	..	..	..	1	..	..
New Bedford, Mass.	96,652	..	..	..	3	..	..	..	..	..	..	..	..
Reading, Pa.	96,071	..	17	..	13	..	17	1	3	..	4	..	3
San Antonio, Tex.	96,614	..	..	..	1	..	..	..	..	..	..	..	..
Camden, N. J.	94,538	..	16	..	29	4	14	..	6	..	..	1	..
Salt Lake City	92,777	..	15	..	6	2	14	1	4	..	..	..	1
Lynn, Mass.	89,336	..	3	..	11	3	16	..	4	..	..	..	2
Springfield, Mass.	88,926	..	21	1	36	1	9	1	2	..	6	..	..
Wilmington, Del.	87,411	1	14	..	13	3	9	..	6	..	1	..	5
Des Moines, Iowa	86,368	1	31	..	41	..	12	..	23	..	12	..	..
Lawrence, Mass.	85,892	..	11	1	..	5	22	..	..	..	..	..	..
Tacoma, Wash.	82,972	2	4	1	3	..	3	..	2	..	..	..	1
Kansas City, Kan.	82,331	1	10	..	17	..	33	..	14	1	5	..	..
Yonkers, N. Y.	79,803	..	32	..	5	..	8	..	..	..	4	..	..
Houston, Texas	78,800	..	..	..	1	..	1	..	..	..	..	..	..
Duluth, Minn.	78,466	..	13	..	9	2	10	..	3	..	1	..	..
St. Joseph, Mo.	77,403	1	23	1	41	1	24	..	11	..	1	..	..
Somerville, Mass.	77,236	..	..	..	..	..	1	..	2	..	..	..	1
Troy, N. Y.	76,813	..	..	2	18	..	16	1	8	..	2	..	1
Utica, N. Y.	74,419	..	18	..	10	..	5	..	1	..	..	..	..
Waterbury, Conn.	73,141	2	8	..	14	..	5	..	15	1	..	..	..
Schenectady, N. Y.	72,826	..	4	..	20	..	8	1	13	..	7	..	..
Hoboken, N. J.	70,324	..	1	1	24	..	7	..	4	..	..	..	1
Elizabeth, N. J.	73,409	..	43	..	72	..	37	..	15	..	1	..	..
Manchester, N. H.	70,063	..	3	..	1	1	5	..	..	..	..	..	1
Evansville, Ind.	69,647	..	5	..	12	..	6	..	7	..	1	..	..
Norfolk, Va.	67,452	..	..	..	..	..	..	..	..	..	..	..	..
Wilkes-Barre, Pa.	67,105	1	..	3	38	1	15	2	8	..	2	..	5
Peoria, Ill.	66,950	..	8	..	27	1	22	1	17	..	..	..	2
Erie, Pa.	66,525	..	..	..	1	..	4	..	2	..	3	..	1
Savannah, Ga.	65,064	..	..	..	..	..	..	..	..	..	..	..	..
Harrisburg, Pa.	64,186	..	23	1	71	..	22	..	3	..	1	..	..
Portland, Maine	58,571	1	2	..	..	..	2	..	..	1	2	..	..
Totals		94	2,458	83	2,860	80	2,935	43	1,455	16	771	12	522
Totals elsewhere		70	1,791	80	2,600	135	2,156	88	1,337	41	775	29	423
Grand total		164	4,249	163	5,460	215	5,091	131	2,792	57	1,546	41	945

TOTALS IN CHIEF CITIES

Table 9 shows the number reported killed and injured in our largest cities during each of the past six years. The population figures are from the United States Census of 1910. This table is of particular interest, since by it the results of the adoption and enforcement of prohibitive or restrictive ordinances can be seen. Chicago, Philadelphia and Detroit each reported two deaths this year and six other cities reported one each, making a total of twelve deaths in our largest eighty-four cities as compared with sixteen killed last year, forty-three in 1910 and eighty in 1909. Philadelphia is the only large city having more than 100 injuries this year. Altogether only 522 non-fatal injuries were reported for these large cities this year, as compared with 771 last year, 1,455 in 1910 and 2,935 in 1909. A slight increase is seen in the records of some of these cities, although on the whole there has been a decided reduction. Even Philadelphia has reduced its total by more than one-half.

Of these eighty-four cities, twenty-one have a record of six or more injured, the same number as last year, but twenty-six less than in 1910 and thirty-seven less than in 1909. There were thirty of these cities which had a clean record this year as compared with twenty-four last year, eighteen in 1910 and eleven in 1909. On the other hand, only one city had more than 100 injured in each of the last two years, as compared with three in 1910, and six in 1909. Probably the most marked reductions in the number of injured in the last few years have been in New York, Chicago, Boston and Newark. From Newark no casualties have been reported during the last two years, although there were 150 injured and one killed there in 1909.

WHERE THE RESPONSIBILITY RESTS

As has been reiterated in these annual reports, the responsibility for the vast majority of Fourth of July injuries clearly rests with city governments, since the employment of death-dealing methods of celebration is subject to their regulation. It is therefore the duty of the city authorities to decide whether or not the maiming of hundreds, the agonizing deaths from lockjaw and the burning to death of little children by fire from fireworks are to be continued. Prohibitory ordinances are most effective and permanent, as shown by the results in Baltimore, Washington, Cleveland, Trenton and this year in Chicago, and even restrictive ordinances, if they could be rigidly enforced would be effective. But the enforcement of restrictive measures is difficult and requires constant vigilance on the part of the police. By the sound, it is difficult to know whether an explosion is due to a firecracker 3 inches long or to one 5 inches long, or whether it is due to some other forbidden form of fireworks. Under a prohibitory ordinance, however, any explosion is recognized at once as a violation of the law. Again, the smaller firecrackers and sparklers, which have been considered so harmless, caused the clothing of several girls or small children to catch fire this year and all were burned to death.

RECENT PROGRESS

It was understood from the beginning that the obliteration of the sorrow and suffering needlessly caused during the annual celebration of the Fourth of July could be brought about only by a vigorous campaign of education favoring more enlightened methods coupled with the enforcement of restrictive or prohibitive legislation against destructive methods.

For ten successive years THE JOURNAL has collected and published the statistics showing the dire results of this pseudopatriotic celebration of July 4, but for several years, apparently, there was little result. Aside from a publication of THE JOURNAL'S figures by a few prominent newspapers no attention was paid to the awful facts. In 1907, however, another table was added to THE JOURNAL'S statistics showing the number of killed and injured by cities and emphasis was laid on the statement that the responsibility for these casualties clearly rested with city governments. Also reprints of THE JOURNAL'S report were circulated far and wide among newspapers and other publications. Since that time not only has the press of the country generally taken up the cause but also local, state and national organizations and societies have become interested. They have not only argued against the use of fireworks, but, more important still, have provided more rational and patriotic means of celebration. A correspondingly vigorous action has been taken by city councils during the last few years in enforcing restrictive or prohibitive legislation. These various forces, using and quoting as they did the statistics published annually in THE JOURNAL, have finally reduced the totals of casualties to a small fraction of what they were in previous years. The necessity of perseverance in this campaign for better methods of celebration is aptly shown by the record of Philadelphia. In spite of a most vigorous campaign which has been carried on during the last two years, that city still has over 100 injuries. A continuance of that campaign, however, will doubtless clear the city's record. The more general enforcement by city councils of restrictive measures, similar to those adopted by Chicago, Boston, New York and elsewhere, will do much to help the situation. Reports received also indicate that hundreds of smaller cities and towns this year enforced either restrictive or prohibitive measures. These measures should everywhere be generally adopted.

THE METHOD OF SUBSTITUTION

Better by far than mere negative methods of restricting or prohibiting the use of fireworks during the last few years, however, has been the general adoption of positive methods of reform. Our national Independence Day must cease to be a day of destruction and become a day of recreation, joy and enlightenment. From every section of the country comes the news that, in place of the senseless din of former years, more truly patriotic methods have been employed. The display of flags, the music of bands, the children's parade, the witnessing of historic floats, and afterward the picnics, the trips to the parks and the visiting of friends — these methods are coming more generally into favor. And the result is evident; the smallest number of lockjaw cases and other deaths reported in any year since THE JOURNAL began the collection of these statistics; fewer blinded eyes, fewer maimed bodies and an astonishing reduction in the number of injuries. Let the campaign be continued until this annual slaughter of innocent children shall cease and until common-sense methods of celebration shall prevail throughout our fair land.

The Ideal General Practitioner.—He is virile by virtue of his environment; he is self-reliant from his isolation; he is resourceful from necessity; he exalts common sense above fine theories; he deals with all conditions and preserves a breadth of vision, grasps general principles, and, failing the finer technical knowledge of the specialist, is spared the distortion of his perspective. He knows his patient as a man and a friend and not as a commodity, and he it is who exemplifies best and most consistently that unselfish regard for others that glorifies medicine.—Meara in *Boston Med. and Surg. Jour.*

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[*For other information see second page following reading matter*]

SATURDAY, SEPTEMBER 7, 1912

THE FOURTH OF JULY IN 1912

Probably in no previous year in the last half or three-quarters of a century has the celebration of the Fourth of July been so quiet, so orderly or so worthy of the dignity of a great nation as it was in this year of our Lord, nineteen hundred and twelve. And probably in no previous celebration has there been so extensive and general a display of the national flag as this year. Irresponsible rowdies with their giant firecrackers, their blank-cartridge pistols and their reckless shooting of firearms, instead of being tolerated in our large cities were promptly arrested and fined in most instances. This year, instead of the usual pandemonium of ear-splitting and nerve-wrecking noise, there was order, with quiet, genuine enjoyment and recreation. Instead of the former heathenish methods of celebration, there was much more general use of flag drills, band concerts, picnics, children's parades, pageants in which historic events were represented, etc. Bright, innocent children, instead of being tortured, blinded, mutilated and burned to death as in former years, were this year preserved for their families and the world, save in a few sad instances. Instead of 5,623 persons injured—the number reported by THE JOURNAL only a few years ago—there were only 988; and instead of 466 killed, including 406 who were subjected to the agonizing tortures of lockjaw, as reported by THE JOURNAL in 1903, there were only forty-one killed, including six tetanus victims. Instead of having a continuous struggle of from twenty-four to seventy-two hours against disastrous fires caused by the discharge of fireworks, this year the fire departments of our large cities, with a few exceptions, were practically idle. The forcing into bankruptcy of a few large fireworks factories in the last two or three years has been more than offset by the enormously increased sale of flags, bunting, banners and decorations.

Besides their immediate effect in saving lives, preventing needless tortures and injuries, and increasing the enjoyment of the day by the new form of celebration, these changes have a much wider, more important and lasting significance. Whereas the old methods encouraged lawlessness, disorder, noise and a selfish disregard of human life and comfort, the new methods of celebrating Independence Day present an annually recurring opportunity to develop in the youth of our land ideas of national and civic righteousness and a love of law and order. The old form of celebration permitted our national holiday to be given over to a furtherance of loose methods and degeneracy; the new methods will make of the celebration a means of developing a better and more useful citizenship.

No day stands for more in the national life of this country than does the Fourth of July; hence the forms of its celebration point in the direction whither the undercurrents of national feeling are turning. The flagrant disregard for law and order shown by the reckless use of firearms, blank cartridges and fireworks July 4 is but a parallel to the absence or looseness of law or authority in other phases of our national life. As a reaction against the tyranny of monarchs which led to the formation of this republic, our government apparently swung to the other extreme of allowing the individual too much freedom. This was inevitable, however, in the beginning of our country's history and continued so during the rapid extension of the frontier. In fact, it has been only in comparatively recent years that the need of better laws, providing for the checking of selfish greed in the interests of the people as a whole, has been more evident. Hoodlums and other reckless individuals were allowed to shoot, maim and kill others in a noisy, barbarous celebration of the Fourth of July for the same reason, clearly, that the vicious were permitted to traffic in vice; that the corrupt were allowed to find their profit on so huge a scale in politics; that corporations and private owners were permitted to neglect safety-devices in mines and other hazardous occupations; that thieves were allowed to appropriate the nation's timber and mineral lands by wholesale; that in a few years' time capitalists owning only thousands could become multimillionaires or billionaires, and that such disgraceful scandals as Lorimerism were made possible. In short, the health and the life of the people have been wasted or jeopardized in countless ways for the profit of a few, because the people feared to infringe on individual liberty by exercising their own authority. Only a few years ago, in fact, this trend toward an apparent national degeneracy was so marked that the country was becoming a mockery and a byword abroad, and its future well-nigh a subject of despair to many at home. Such almost was the feeling held by THE JOURNAL when year after year—for seven long years—the publication of the awful results of the senseless—nay, damnable—methods of celebrating the Fourth were treated with indolent disregard and even in some instances with resentment and ridicule, while the annual murder and mutilation of thousands of innocent children went deliberately on.

Other agencies have been energetically at work, and with some success, to correct other evils; and, by persistent hammering, THE JOURNAL'S statistics have finally so thoroughly aroused public sentiment that the

prohibition of fireworks and noise and the adoption of safe and sane methods of celebrating the Fourth of July are being generally demanded. A new era in our national life has begun wherein the necessity is recognized for law and regulation nicely calculated to place a check on individual selfishness and avarice in the interests of the people as a whole without hampering any justifiable private activity. There is still much room for improvement, however, in the celebration of our Independence Day. A total of forty-one killed, including six little children who died by the most agonizing death known to modern times, and 947 who were blinded, or bereft of arms, legs or hands or otherwise mutilated, many for life, still presents too serious a picture to permit a cessation of activity. Even though the totals are smaller than in previous years, the picture of these bright, active, sweet-faced children who but for the criminal negligence of city authorities would still be among the living, is just as pitiful as ever. This year Chicago and several other cities exchanged restrictive for prohibitive measures and secured almost clean records. Cannot the authorities in all our cities and towns—and they are the ones who have the authority and, therefore, the responsibility in this matter—adopt and enforce effective measures so that following no celebrations hereafter will any doors bear crape or any hearts needless sorrows as a consequence of accidents so easily prevented? May not the next seven or eight months see so general an adoption of measures prohibiting fireworks that this national disgrace will be a thing of the past?

THE NEED OF A CRITICAL ATTITUDE IN CURRENT DISCUSSION ON NUTRITION

It was not until recent years that the practical questions relating to dietary standards received any widespread attention in the United States. The unremitting efforts of the late Professor Atwater and his associates, facilitated by the cooperation of governmental departments in giving a larger publicity to the work thus accomplished, have not been without permanent good in stimulating a wholesome interest in the subject of nutrition. From different angles other American investigators have brought their power to bear on the problems of food and diet, so that no one can deny the existence of a sort of popular enthusiasm for the topics here involved. The fact that the technical expressions of physiology—calories, food units, metabolism and the like—have found their way into the humorous publications of the day as well as into the scientific journals, testifies to the hold which the study of nutrition has on the popular mind. Scarcely a week passes without some final dictum in the magazines of the day on the correct habits of eating; and the clever diction which some of these writers cultivate at times serves to conceal a ridiculous inference which is likely to appeal to popular fancy and frequently acts as a substitute for a more wholesome critical attitude. There is in much of this a danger that the reading public will—to borrow another's expression—become educated beyond its knowledge.

The interesting and laborious work of Chittenden and his colleagues at Yale on the practical protein minimum for an every-day dietary has led to much difference of opinion. In Germany the conclusion of these investigators that the commonly accepted "standards" of Voit and of Atwater, calling for a daily protein intake of 118 gm. of protein and over, are unduly large has received more ready acceptance than in Great Britain. In the United States the new propaganda has attained considerable popularity; but protests have by no means been lacking. Appeals have been made by the advocates of opposing views in a manner which now and then reminded one of partisan politics and the earlier days in the warfare of science[1]. The need of trenchant criticism is well illustrated by some of this literature from which the following widely quoted experience may be cited.

Major McCay of the Indian Medical Service has collected a valuable series of observations on the dietaries, food utilization and metabolism of certain native races that inhabit lower Bengal. These persons, who subsist on a simple vegetarian diet, in accord with the custom of many of their Eastern neighbors, are of inferior physique, of low endurance and activity and not long lived. Their protein intake is exceptionally low, conforming to the minimum figures set by Chittenden, and amounting to about 40 gm. of protein per day. Contrasting these Bengalis with some of the other peoples who consume protein more liberally and also have a superior physique, McCay has reached the conclusion that the physical inferiority of his subjects is directly attributable to the low plane of nitrogenous metabolism on which they subsist. The low protein standard has resulted in a bodily deterioration of most threatening aspect.

Here, at length, it might seem as if the advocates of protein economy had received a setback by an experiment in daily life carried out on a large scale and over a sufficient period to carry conviction with it. An unbiased inspection of the facts, however, warns us to be cautious in formulating our conclusions. McCay found that his subjects were in nitrogenous equilibrium despite the confessedly low protein intake. In other words, there were no losses of nitrogen from the body notwithstanding the wretched condition of the individuals. This fact of itself might make one question whether after all the protein level of the diet is at fault in these cases. This suspicion is strengthened by an inspection of the general character of the Bengali diet. These natives subsist almost entirely on rice and dhall, a kind of legume apparently characterized by its indigestibility and extreme unsuitability as an adjuvant to the diet. No less than one-quarter of the ingested protein remained

1. A review of some of the conflicting opinions is given by Mendel, L. B.: Theorien des Eiweisstoffwechsels, Ergebnisse d. Physiol., 1911, xi, 418. Cathcart, E. P.: The Physiology of Protein Metabolism, Longmans, Green & Co., 1912, p. 69.

unutilized, giving opportunity for the most objectionable alimentary conditions in the form of irritating and continuous putrefactive changes. Diarrheas and inevitable pathologic intestinal phenomena were regularly observed. If any diet has been singularly inappropriate from a qualitative standpoint, the descriptions of McCay indicate that it is to be found among these Bengalis.

The cited facts should warn us against any hasty acceptance of the broad conclusion that protein is the most important factor in physical development and the general welfare of mankind. There are too many complex factors, aside from mere quantity or composition, to warrant these hasty judgments. The foregoing considerations are not necessarily to be accepted as decisive in the protein minimum controversy. Indeed, they rather constitute a confession of "not proven." The lesson lies in the admonition against superficial judgments and the necessity of approaching the data with objective scientific critique.

THROMBOSIS AND EMBOLISM AFTER OPERATION FOR APPENDICITIS

In twenty-two out of 188 cases of operation for appendicitis, Bull[1] observed the development of thrombosis; his was followed by pulmonary embolism in fifteen, with two deaths. On the basis of this experience as a text Bull presents an exhaustive and instructive discussion of postoperative thrombosis and embolism especially in relation to appendicitis. In explanation of the apparently large proportion of this complication it may be pointed out that all the cases, which are unselected, occurred in the private practice of the same surgeon and were observed with special care; hence it is highly probable that many instances of thrombosis and embolism were recognized which under other circumstances would have escaped notice.

In this series, only embolism of the lungs is considered, as there were no cases of embolism in the portal system. In nine of the twenty-two cases the source of the emboli was manifest thrombosis, mostly in the left femoral vein, which was affected six times, but also in the right femoral vein and in the veins of the muscles of the leg; in thirteen cases the source of the emboli is referred to occult thrombosis in the veins about the incision, in the pelvic veins, or in the vena cava, etc. In the two fatal cases the seat of thrombosis was found to be in the pelvic veins. Nearly all the instances occurred in patients past 30 years of age and more often by far in women than in men. There was no noteworthy difference in the frequency of thrombosis and embolism in patients operated on during the interval as compared with those operated on during the acute attack, but the tendency to thrombosis seemed greater in the severe acute cases than in the milder, and especially so far as concerns femoral thrombosis. Whether thrombosis in any of these cases had started before the operation cannot be stated.

Of the symptoms and signs of manifest and palpable thrombosis it is not necessary to speak. Outside of embolism the most important symptoms of occult postoperative thrombosis are a slight irregular rise of temperature without manifest cause and mild general disturbances. There may be no reliable symptoms until pulmonary embolism suddenly throws light on the situation. The symptoms caused by pulmonary embolism depend on the size of the embolus. The phenomenon of fatal pulmonary embolism needs no portrayal at this time; its occurrence after a satisfactory operation and when the patient is well along the road to recovery is one of the great calamities in surgery. The symptoms caused by medium and small emboli lodging in the lungs are, in general, pain in the precordium or epigastrium, one side, or back, depending on the place of lodgment, associated with more or less uneasiness, dyspnea and rise of temperature, followed by hemoptysis if hemorrhagic infarction develops, in which case certain evident physical signs are usually present. It would seem as if pulmonary embolism should be easily detected, but doubtless cases often are overlooked and the symptoms attributed to rheumatism, neuralgia, pneumonia or nosebleed; the careful observer, however, will not be misled by superficial resemblances if he is intent on discovering the real cause of such postoperative disturbances even when seemingly slight. Postoperative thrombosis is usually not dangerous as to life, although complete recovery may require a long time; when pulmonary embolism takes place, the prognosis is uncertain because there is danger of several attacks.

The most obscure phase of postoperative thrombosis is its etiology, unless one accepts the view now so generally prevalent that it always results from infection. Although attractive in many ways, this view leaves many facts unexplained. Among these may be mentioned especially the immunity to thrombosis in the young; the comparative frequency of the complication after laparotomies; its occurrence after clean operations as well as operations for infective conditions—it is two or three times as frequent after aseptic operations for myofibroma of the uterus as after removal of infected adnexa—and the fact that it is five or six times as frequent in the left femoral vein as in other large veins. It is remarkable also that the emboli which form as a consequence of postoperative thrombosis comparatively seldom suppurate. Manifestly, infection alone is not an adequate explanation of all these peculiar characteristics of postoperative thrombosis. Bull discusses this aspect of the subject fully. He reaches the tentative conclusion that postoperative thrombosis may result without infection and that the underlying conditions are largely of mechanical nature, the evident result being interference with the circulation of the blood in the veins. In favor

1. Bull: Supplement to Norsk Mag. f. Lægevidensk., July, 1912; abstr. in THE JOURNAL A. M. A., Aug. 10, p. 492.

of this view he brings forward a number of facts and considerations, of which the following may be mentioned: With advancing years chronic changes usually develop in the veins of the pelvis and the lower extremities, which result in localized thickenings and dilatations and thus favor thrombosis by producing eddies and stasis in the blood-current. This circumstance probably goes far toward explaining why postoperative thrombosis occurs so much more frequently after the age of about 30 than before. The operation of laparotomy in itself tends to interfere with the return circulation by inducing superficial respiration, meteorism and changes in the vascular tonus. With the patient in the recumbent position the current in the femoral veins is hindered more or less as they cross the pubes, and the greater frequency of thrombosis in the left femoral and iliac veins no doubt is connected intimately with their anatomic relations: The left common iliac vein empties into the vena cava at a more obtuse angle than the right and is crossed by three arteries, each beat in which may influence the venous current. These anatomic conditions were discussed recently by Kistler.[2] Whether changes occur in the composition of the blood, owing perhaps to the anesthetic and other factors, is not definitely known. At all events, the apparent importance of mechanical conditions in the development of postoperative thrombosis suggests that bandages and positions that tend to restrict the circulation in the veins most often affected should be avoided so far as possible. The necessity of absolute quiet when there is danger of embolism is self-evident. Finally, Bull's contribution emphasizes once more the really unbounded opportunity possessed by every practitioner to make substantial additions to our knowledge by systematic observation and careful study of his clinical material.

2. Kistler, H. D.: Thrombophlebitis of the Left Leg, THE JOURNAL A. M. A., August 10, p. 437.

OXYGEN AND PULSE-RATE

Oxygen therapy has in some way or another entered into the experience of almost every physician, yet we doubt whether any clear conception of the actual rôle which the gas plays is formulated by many who administer it. Much has been written about oxygen inhalation; but the majority of the contributions to the literature of this subject are not founded on the solid basis of either experiment or accurate clinical records. Critical investigation which will place the subject of oxygen therapy on a sound basis is much needed.

In view of the efficiency of hemoglobin as an oxygen-carrier and the liberal supply of the gas furnished by the respiration of ordinary air, it would seem scarcely possible to increase the actual consumption of oxygen by still further increasing the oxygen in the air inspired. In a careful investigation of the effects of breathing oxygen-rich gas mixtures, in the Boston Nutrition Laboratory of the Carnegie Institution of Washington, Benedict and Higgins[1] note that there is no apparent difference between the metabolism as indicated by the gaseous exchange (i. e., the carbon dioxid output, oxygen consumption and respiratory quotient) and the metabolism when breathing ordinary air. Furthermore, there is no change in the character, depth or frequency of the respiration as compared with the same factors when breathing ordinary air. One observation, however, is striking, namely, the lowering of the pulse-rate as higher and higher percentages of oxygen are breathed. The decrease is quite notable and has been verified by Parkinson[2] in England. After the oxygen is stopped the pulse-rate at once increases and almost regains the original rate in fifteen minutes.

The explanation of this action of oxygen is difficult. Perhaps, as Parkinson believes, the heart-muscle supplied with excess of oxygen itself works at greater advantage and also provides the amount of oxygen needed by the tissues with less expenditure of energy, i. e., by fewer beats. Yet how are we to understand that an already well-oxygenated blood is to take up an additional excess? Although the hemoglobin as an oxygen-carrier is not noticeably affected, perhaps the blood-plasma takes up a larger amount and thus facilitates the oxygenation processes.

It is suggested that in those cases of disease of the heart and lungs in which the pulse-rate is increased, the administration of oxygen will as a rule be found to reduce it. Doubtless the greatest effect is produced when the heart is ill-supplied with oxygen. In any event, the now well-substantiated influence on the pulse-rate when oxygen-rich mixtures are inhaled deserves to be kept in mind for its therapeutic possibilities.

1. Benedict, F. G., and Higgins, H. L.: Effects on Men at Rest of Breathing Oxygen-Rich Gas Mixtures, Am. Jour. Physiol., 1911, xxviii, 1.
2. Parkinson, J.: The Effect of Inhalation of Oxygen on the Rate of the Pulse in Health, Jour. Physiol., 1912, xliv, 54.

WHERE ARE THE ETHEREAL SULPHATES FORMED?

More than thirty-five years have intervened since Baumann's discovery of ethereal sulphates as a constituent of the urine. These compounds, and particularly the one familiarly known as indican, have come to possess a prominent significance in clinical medicine as well as in physiology. The conjugated sulphates are associated with putrefactive processes in the alimentary tract and represent one of the forms in which toxic products are paired and eliminated from the organism. Phenol, cresol, indol and skatol are known to unite with the sulphuric acid radical in the course of their path toward excretion; and the ethereal sulphates have often been taken as an index of the extent to which these undesirable compounds are encountered as the outcome either of alimentary or of metabolic changes.

Although the gastro-intestinal canal has been clearly connected with the genesis of the more or less toxic products which are ultimately eliminated as sulphate

derivatives, the seat of their synthesis into the urinary end-product has not been so conclusively determined. Like many other text-book traditions, the association of the formation of the ethereal sulphates with the liver has been handed down from edition to edition. It is, of course, a natural sequence to ascribe this synthetic function to the liver, an organ so closely connected through the portal circulation with the alimentary tract. Furthermore, there is some experimental justification for the commonly accepted view. Perfusion experiments with the products under consideration carried out on excised livers have indicated a synthesis in the organ.

Lade[1] has attempted to learn whether the production of the ethereal sulphates is confined to the liver by studying their output in animals whose hepatic functions have largely been excluded by an Eck fistula operation. When the portal blood is diverted in this way from the liver the excretion of the sulphates by no means ceases. Even when the liver is still further damaged by administration of phosphorus they may be produced in undiminished amounts. Evidently, then, the liver is by no means necessary for the conjugation leading to the elaboration of the ethereal sulphates. Whether the reaction here involved is common to various tissues of the body or is confined to the intestine, within which the products to be taken care of arise, remains to be determined. In any event the liver still has enough activities in its list of physiologic duties to keep it out of mischief.

FINGER-PRINT IDENTIFICATION

Francis Galton published[2] his "Finger-Prints" in 1892, and soon afterward his "Index of Finger-Prints." His theory is that the chance of the finger-prints of two individuals being identical is less than one in sixty-four billions. If, therefore, two such prints are compared and found to be identical, nothing in human affairs can be surer than that they are the prints of the same person; if they are not identical they must belong to different persons. The chance of error here is infinitesimal, and is still further eliminated if prints of three or more fingers are taken. The only requisite seems to be that they be taken clearly enough to bring out all the lines. It is considered that these lines and prints are more enduring than any other marks of the body; they do not vary from youth to age; they persist even after death — at least until decomposition has set in. Injuries alone change them; but the scar on a cut that has been printed would be an additional identification.

This finger-print system of identification is by some accredited to Bertillon, but erroneously, it would seem. It was Galton, that amazing genius in scientific detail and in the utilization of data, who proposed and first reduced the finger-print method to a system; and when he made it known to Bertillon, the latter was for a long time skeptical as to its utility, preferring his own system of measurements.

The finger-print system is the surest method of identifying criminals, and such evidence has been deemed incontrovertible in judicial procedures. About a month before Galton died this method was temporarily under a cloud: A man was charged in an English police-court with loitering, supposedly in order to commit a felony. When a previous conviction was sought to be established against him by the production from the police records of finger-prints identical with his, he handed in papers tending to show that he had been serving in the army at the time of the alleged conviction, whereupon he was promptly discharged. This event was naturally disconcerting to finger-print enthusiasts, who regarded the method as infallible; many skeptics declared, reasonably enough, that this simple failure ought to discredit the whole system. Nevertheless, a week later it was ascertained and proved beyond peradventure that this culprit had stolen the papers of another army man; what is more, it was shown clearly by another mark of identification, as well as by his handwriting, that he was without any manner of doubt the man with whom the police had sought to identify him.

But the finger-print system has a number of uses entirely unrelated to criminal procedures. Railways are using it as a means of identifying employees. Banks now identify foreigners in this way. By means of this system some of the government employees in the Canal Zone sign receipts when their salaries are paid, as do also Indians who cannot write their names. The substitution on documents of the finger-print for the mark of the person who cannot write his name would be a great advance. The latter, which is just a cross, is no identification at all; the finger-print is even more positively and unforgeably a signature than the writing of the name.

Capt. Joseph A. Faurot, who heads the identification bureau of the New York police department, urges a much wider utilization of the finger-print system than at present obtains. He would have every new-born babe and every school child finger-printed as a basis for really adequate vital registration. Such prints will absolutely identify the individual from the cradle to the grave. The print of the baby and of its mother differ unmistakably. The measurements will be enlarged with growth, but otherwise they never change. It was recently objected in the metropolis that persons suspected of crime, but not yet convicted, should not be obliged to be finger-printed; but the leaders of the Men and Religion movement in that city, believing it important for the innocent as well as for the guilty to have it ascertained whether they have ever been under arrest, offered to persuade all men of the churches and in fact all residents whom they could influence, to place the impression of their fingers in the records of the police department.

1. Lade, F.: Ueber die Bildungsstätte der Aetherschwefelsäure im Tierkörper, Ztschr. f. physiol. Chem., 1912, lxxix, 331.
2. Galton, Francis: Finger-Prints, London: MacMillan Co., 1892

Captain Faurot would do away with lost identity in the United States by establishing a central bureau to which the finger-prints of every unit of the population must be forwarded for classification; to this central bureau, which should be a federal institution, all other bureaus — state, county and municipal — would be tributary. There would be two sets of prints of each individual, one deposited at the local bureau, the other at Washington.

Among the many advantages of such a plan would be the possibility that the numberless unknown unfortunates found dead might be identified. This system might solve those puzzles which aphasia and insanity are constantly presenting — cases continually increasing in number by reason of the great strain of our present-day civilization. The crime of desertion might be prevented were the mother's and her infant's finger-tips printed on the same card. The finger-printing of policy-holders would prevent fraudulent death-claims. Finally, if this system ever becomes part and parcel of civilized life, it will have the further advantage of furnishing the readers of Mark Twain's "Pudd'nhead Wilson" with the fantastic pleasure that comes from seeing fiction daily realized in fact.

Current Comment

ABSORPTION FROM THE STOMACH

The possibility of absorption from the stomach has been debated from time to time without leading to any convincing conclusion. Set over against the popular assumption that absorption can proceed from any part of the gastro-intestinal canal are numerous experimental researches in which evidence of the disappearance of alimentary contents through the gastric wall has been entirely lacking. Water is not absorbed from the stomach ordinarily to any extent. Whatever amount is introduced therein can be recovered quantitatively as it passes through the pylorus into the duodenum. Alcohol, on the other hand, is known to disappear from the stomach rapidly even when the pylorus is closed; and there has been evidence furnished to make the gastric absorption of compounds in alcoholic solution appear more likely than is the case for ordinary aqueous fluids. The fact that absorption, if it ordinarily does go on to any extent from the stomach, has escaped the observation of so many competent observers, makes one somewhat skeptical as to the extent to which it really is a normal feature of alimentation. A positive finding, however, must almost invariably supplant a negative hypothesis. Folin and Lyman[1] have lately furnished some convincing indications that the familiar products of protein digestion can be absorbed directly from the stomach. These observations were made on a stomach with a closed pylorus, and therefore need not be applied with immediate reference to the experiences of the normal alimentary processes; furthermore, ordinarily the products of proteolysis found in the stomach have scarcely reached the amino-acid stage which the products studied by the Harvard investigators represented. The essential point rather is the demonstration that the gastric wall is permeable to simple nitrogenous compounds in watery solution. Strange to say, creatinin, which forms a frequent component of the food intake in the form of meat products, appears to lack absorption by the stomach though it is readily taken into the circulation from both the large and the small intestine. This serves as a reminder of how much yet remains to be learned respecting the unique place of creatinin and its chemical relatives in the nutritive processes.

1. Folin, O., and Lyman, H.: Absorption From the Stomach, Jour. Biol. Chem., 1912, xii, 259.

CONGRESS RECONSIDERS

We recently[1] commented on a sweeping provision inserted in the appropriation bill for the District of Columbia whereby no money appropriated by that or any other act could be expended for membership fees or dues or for the expenses of attendance of any officer of the government at a meeting of any society or association. It was pointed out that this enactment would exclude the United States government, as such, from participation in a number of scientific congresses, both national and international, and would result in the scientific isolation of our government. It would seem that this protest has not been in vain. In the act making appropriations for the sundry civil expenses of the government, Section 10 revokes this objectionable prohibition with respect to the current fiscal year, except so far as the payment of membership fees or dues is concerned. This section also provides that a detailed statement of all expenditures for the expenses of attendance at such meetings from June 30 until Dec. 1, 1912, shall be submitted to Congress on or before Jan. 1, 1913. This would indicate that Congress is now willing to inform itself in the matter before taking action on this important question.

OVARIOTOMY: A REMINDER

It has been said that "pelvic and abdominal surgery began with ovariotomy; ovariotomy began with McDowell." Now that the last century's monumental achievements in abdominal surgery have sunk almost into commonplace through frequent repetition, the tale of the prejudiced opposition to this epoch-making procedure seems almost incredible. It is said that while McDowell was performing the first ovariotomy, a little over a century ago, a crowd of excited and angry men waited in the streets of Danville for the result, ready to show little mercy to the courageous surgeon if his "victim" succumbed. That perhaps seems less strange than the fact that W. L. Atlee, thirty or forty years later, "was pointed at as a dangerous man—even as a murderer" for his employment of the same procedure. The semicentennial of the first ovariotomy in France, mentioned by our Paris correspondent this week, now reminds us that over fifty years after the first ovariotomy was performed by a backwoods surgeon in this

1. An Unwise Economy, THE JOURNAL A. M. A., August 10, p. 451.

country, the operation was unknown in France except by reputation, which branded it as "criminal." A curious, yet not incongruous, passage in this strange chapter of surgical history!

A GOOD PROPHYLACTIC EXHIBIT

That the average citizen in towns of 7,500 or more can be led to take an active interest in public health work, was demonstrated recently by the combined work of the various philanthropic and charitable agencies of Waynesboro, Pa., in an interesting and instructive campaign for the lessening of infant mortality. The exhibit was ocular as far as it was possible to make it so, supplemented by lectures given by trained nurses connected with the exhibit, by local physicians in the town, and by representatives of the state health department. The exhibit was advertised under the name of "The Baby-Saving Show," and it well deserved the name. The entire program and nearly every lecture given were published each day in the local papers. Similar "baby-saving shows" were held in many towns in Pennsylvania following the original show in Philadelphia, and for many of them portions of the exhibit used in Philadelphia were borrowed. It is gratifying to see the increase in work of this kind. It pays well in lives saved and sickness lessened.

HYGIENE AT STATE AND COUNTY FAIRS

Missouri, through her state medical society, has taken up the matter of educating the public in hygienic and sanitary matters by providing a course of lectures and an exhibit at the state fair. Two half-hourly lectures are to be given each day of the fair by some physician or veterinarian on various medical and sanitary subjects pertaining to human beings and animals, supplemented by moving-picture exhibits along the same line. The *Journal of the Missouri State Medical Association* appropriately recommends that county medical societies, cooperating with the county boards of health, county superintendents of schools and other county officers whose duties bring them in touch with questions of municipal sanitation, arrange similar courses of lectures and exhibits at county fairs as a means of popular education. State and county fairs, although held for public educational purposes, usually confine their attention to stock and other material interests, to the neglect of the most important interest of all, the physical welfare of the human animal.

Medical News

ALABAMA

Accidents.—Dr. John L. Stockdale, Stockdale, fell at his home August 8, fracturing his right hip.——Dr. R. B. Nelson, health officer of Birmingham, fractured his leg while exercising at the Athletic Club, recently.

Hospital Plans Completed.—The plans for the new hospital at Bessemer have been completed and the institution is to be known as the Elizabeth Duncan Memorial Hospital, in memory of the mother of Dr. T. F. Robinson. Work on the erection of the new building will be started very soon.

Personal.—Dr. C. A. Crote, Greensboro, has been appointed a field worker for the State Board of Health under the Hookworm Commission.——Dr. R. V. Taylor, Jr., Mobile, has started for his new field of work in the Baptist Hospital at Yang Chow, China.——Dr. A. W. Cawthorn, Selma, is reported to be critically ill with cerebral hemorrhage.

Approves Bond Issue for Hospital.—The Jefferson County Medical Society at its meeting August 6, adopted resolutions regarding the adopting of the one hundred thousand dollar bond issue for the proposed Hillman Hospital Annex, Birmingham. The hospital, with an equipment for 72 patients, is overcrowded all the time, caring daily for from 90 to 100 patients.

COLORADO

Children's Hospital Association.—At the annual meeting of the medical board of the Children's Hospital Association, Denver, Dr. George B. Packard was reelected president; Dr. Henry A. Sewall, vice-president, and Dr. T. E. Carmody, secretary. The board recommended that steps be taken for the erection of a building with a capacity for one hundred patients.

Another Medical College in Colorado?—It is reported that incorporation papers have been taken out for a "Thompsonian Medical College" to be located at Paonia, Colo., with a stated capital of $100,000. Among the names of the incorporators published is the name of "Dr. R. S. Clymer," who, it will be remembered, was connected with the fraudulent "Twentieth Century College of Medicine," a correspondence institution operated at Guthrie, Okla., and of which the charter was revoked in 1904.

ILLINOIS

New Buildings for Dunning.—The State Board of Administration has approved plans for two buildings at the Chicago State Hospital, Dunning, each to cost $50,000, to replace those recently burned.

County Hospital Examination Declared Unfair.—As the result of complaints concerning a civil service examination held last December for the selection of members of the attending staff of Cook County Hospital, a committee of physicians was appointed to make a careful investigation of the facts. They have declared the examination unfair and recommended its annulment. The Board of County Commissioners accordingly declared the examination void, and will hold a new one.

Chicago

Personal.—Dr. Julius Grinker leaves Chicago September 7 for the East, on his way to Europe.——Dr. B. Barker Beeson has returned from Europe.——Dr. William A. Mowry has been appointed a house physician at the French Lick Springs Hotel. ——Dr. E. A. Fischkin started for Europe, September 4.

Jubilee of Scandinavian Society.—The twenty-fifth annual meeting of the Scandinavian-American Medical Society will be held in Chicago next month. Plans for the anniversary meeting include a scientific meeting and the distribution of a memorial volume detailing the work of the Scandinavian medical men of Chicago from the earliest days.

INDIANA

Tuberculosis Conflict.—The county board of St. Joseph County has appropriated $15,000 for the sanitarium for tuberculosis and tentative plans for the building have been drawn. This is the result of the earnest work of the local society for three years. The tuberculosis camp at present has accommodations for thirteen and has a large waiting list.——At a meeting of Spanish-American War veterans in Lafayette, August 6, a campaign was started to build a tuberculosis sanatorium at the Indiana State Soldiers' Home to cost about $10,000. The local veterans have subscribed $500 of the amount.

Personal.—Dr. Herman G. Morgan has succeeded Dr. C. S. Woods as city sanitarian of Indianapolis.——Dr. Lynn Rogers, Fort Wayne, has been appointed a house physician at French Lick Springs Hotel.——Dr. C. S. Woods, formerly city sanitarian of Indianapolis, was presented with a gold watch and chain by the members and employees of the board, August 16. The presentation speech was made by Dr. E. B. Mumford.—— Dr. M. S. Canfield, Frankfort, has been appointed local surgeon of the K. M. and W. Traction Line.——Dr. C. B. Stemen, Fort Wayne, has been reelected president of the Elida Pioneer Society.——Dr. and Mrs. A. P. Roope and family, Columbus, have sailed for Europe.——Dr. A. O. Ward, Indianapolis, was knocked down by a wagon, August 10, and painfully injured.

IOWA

New Officers.—Botna Valley Medical Association at Atlantic, August 22: president, Dr. Frank Hanna, Walnut; secretary-treasurer, Dr. A. Weaver, Cumberland.

Gives Funds for Hospital.—The Fort Madison Medical Society, at a special meeting August 19, voted an appropriation of $500 from the treasury for the purchase of equipment for the new Sacred Heart Hospital.

Personal.—Dr. H. A. Steckel, third assistant physician at Mount Pleasant State Hospital, has resigned to accept a position as assistant at the Kings Park State Hospital, Long Island, New York.——Members of the Dubuque County Medical Society gave a farewell banquet in honor of Dr. E. R. Jackson, Dubuque, who is about to leave the city for Oregon.

MARYLAND

Crusade Against Impure Water and Milk.—The State Board of Health has commenced a crusade against impure water and milk, and will make examinations of all water throughout the state.

State Entrance Examination.—Maryland medical and dental college entrance is now in the hands of the state board. An examination will be held at the hall of the State Medical Society, September 12-14, in charge of Mr. Isaac L. Otis of the department of civics and history of the Polytechnic Institute. Those who can show evidence of a four-year high school course will be exempt from this examination for entrance to the medical schools, and those who show a three-year course will be exempt from examination for entrance to dental schools.

Baltimore

Changes in Health Department.—Drs. John H. Von Drelle, E. K. Ballard, C. Franklin Jones and J. Harry Ullrich have been appointed health wardens, vice Drs. Vernon F. Kelly, William Caspari, W. D. Olmstead and Marshall G. Smith. ——Dr. Harry Kolb has succeeded Dr. J. Howard Iglehart as inspector of schools.

Personal.—Dr. William S. Thayer has been appointed a member on the commission for the study and prevention of malaria in the South.——Dr. Thomas R. Brown has been placed in charge of the bacteriologic and research department of the Ohio State Hygienic Laboratory, Columbus.——Dr. M. L. Todd, who has been ill in St. Agnes Hospital with typhoid fever, is reported to be convalescent.——Dr. Randolph Winslow has returned from a trip to Panama, Cuba, Jamaica and Costa Rico.——Dr. William Royal Stokes has recovered from his recent illness and resumed his duties as city bacteriologist.——Dr. Isaac M. Macks has been appointed pathologist at the University of Maryland.

NEW YORK

Higher Preliminary Requirement Adopted.—It is reported that the New York regents at a meeting held August 29 voted that, after Jan. 1, 1913, an applicant for a medical student certificate, qualifying for admission to a medical school, must have completed a year's study in physics, biology and inorganic chemistry.

Hospital Contract Held Up.—The State Board of Charities has served an injunction preventing the awarding of the contract for the kitchen and dininghall to be added to the tuberculosis pavilion of the Metropolitan Hospital on Blackwell's Island because the plans for the buildings were not submitted to the State Board of Charities. The Commissioner of Charities of New York had the opinion of counsel that it was not necessary to submit plans of hospitals to the Board of Charities of the state. The case will be tried on September 7.

New York City

Held for Suspected Cholera.—On account of a case of disease on board the steamer *Martha Washington*, which arrived in New York August 13 from Palermo, the steamship was held in quarantine until the test for cholera had been made.

Private Hospital for the Bronx.—Jacob H. Schiff, Sol. R. Guggenheim, Ferdinand Sulzberger and Samuel Sach have each given $50.000 for a fund for the construction of a private hospital for persons suffering chronic diseases, to be built by the Montefiore Home, in the Bronx.

Wall Street Men Vaccinated Against Typhoid.—Since the recent outbreak of typhoid fever in Wall Street, one firm employing about twenty persons, asked that they submit to the administration of typhoid antitoxin. This they readily did. It is understood that a number of other houses will follow the same course.

Fish of Flushing Bay a Menace.—A number of cases of ptomain poisoning have been attributed to fish taken from Flushing Bay. All of the fish and shell fish in the bay were killed some years ago when factories were established on the bay. Recently a dye works moved away and an attempt was made to restock the bay with fish. The Board of Health of Queens is making an investigation and, if suspicious are verified, will prohibit the use of fish taken from the bay.

Saving the Babies.—The Babies' Welfare Association continues to keep ahead of its record of last year. For the week ending August 23 there were 358 deaths of infants under one year of age against 361 for the corresponding week of 1911. During this week there were nine deaths among babies cared for by the milk stations. In an appeal for funds to continue the work among tenement babies, sent out by the New York Association for Improving the Condition of the Poor, this organization announces that it has spent during the last ten months $20,000 for milk for sick babies and that no administrative or investigation work is included in this sum.

Personal.—Dr. William H. Tolman, director of the American Museum of Safety, has returned from Europe bringing with him a collection of articles presenting the latest ideas in life-saving apparatus. Dr. Tolman has also brought a number of wax models showing the effects of various occupational diseases. ——Dr. and Mrs. G. F. Blauvelt, Nyack, N. Y.; Dr. and Mrs. W. T. Alexander, and Dr. and Mrs. L. A. Conner have sailed for Europe.——Dr. W. S. Russell, Dr. W. Benham Snow, Dr. and Mrs. G. G. Rambaud, Dr. W. B. Brinsmade, Brooklyn, and Dr. and Mrs. Howard C. Taylor have returned from Europe.——Dr. J. Wallace Beveridge has been suffering with mastoiditis for the past three weeks. His condition is said to be very satisfactory.——Dr. David E. Hoag has returned after a three-weeks' automobile trip through the Canadian provinces.——Dr. Le Roy Broun has returned from Europe.——Dr. Charles B. Meding of the Harlem Eye, Ear and Throat Hospital sailed for India September 1, and after studying cataract extraction at Amritsar, will visit China and Japan.

OHIO

Personal.—Dr. Cook, National Soldiers' Home, Dayton, has been appointed third assistant physician at the Mount Pleasant (Iowa), State Hospital.——Dr. Dana O. Weeks has been appointed health officer of Marion.——Dr. L. A. Lemmon, East Liverpool, was seriously injured in a collision between his automobile and an electric car, August 2.——Dr. E. R. Crew, Miamisburg, has succeeded Dr. J. C. George, resigned, as superintendent of the Miami Valley Hospital, Dayton.——Dr. H. G. Sherman, head of the medical supervision department of the public schools of Cleveland, has resigned.——Dr. Paul W. Tappan, Dayton, has been commissioned captain, M. C., O. N. G. ——Dr. Arleigh C. Delaplane, night physician at the State Penitentiary, Columbus, has resigned to accept a position as assistant physician in the volunteer relief department of the Pennsylvania System.——Dr. J. W. Bunn, West Union, is reported to be critically ill with cerebral hemorrhage.——Dr. William C. Stafford, Youngstown, is reported to be seriously ill.

PENNSYLVANIA

State Hospital Soon Ready.—The Rittersville State Hospital, which has been under construction for more than ten years, is about to be opened to receive patients, September 14.

School Dispensary Established.—A school dispensary is to be opened in the administration building of the board of education at Reading to treat school children for minor defects. It will be under the care of Dr. Heister Bucher, chief medical inspector of city schools.

Sanatorium Contracts Awarded.—The contract for the Hamburg State Tuberculosis Sanatorium was awarded August 22 to Buffalo contractors for $510,629. This contract calls for the construction of an administration building, power house, laundry and two wings with initial capacity of four hundred patients.——Contracts have been awarded for a new building at White Haven Sanitarium to cost $25,000.——The contract for the refrigerating plant of the Cresson Sanitarium has been given a DeKalb, Ill., company for $3,510.

Personal.—Dr. D. P. Maddux, Chester, has been reappointed a member of the State Board of Education and Licensure and Dr. William A. Stewart, Pittsburgh, has been appointed a member of the board.——Dr. I. Riley Bucher, Lebanon, celebrated his eightieth birthday anniversary, August 22.——Dr. Thomas P. Martin, Mayfield, was operated on for appendicitis at Dr. Burns' Private Hospital, Scranton, August 21.——Dr. Edward Kerr, East Downington, has been elected chief physician at the Chester County Hospital.——Dr. Ernest Zueblin, pathologist of the Tuberculosis League Hospital and Dispensary and a member of the medical staff of the Allegheny General Hospital, Pittsburgh, has been appointed a member of the staff of the University of Maryland, Balti-

more.——Dr. Charles F. Palmer, Chambersburg, is ill in the Chambersburg Hospital.——Dr. Gyula Ullmann, Chester, is reported to have received a bronze medal from the French government in recognition of research work on mineral waters in France.——Dr. J. O'Malley, Scranton, has been appointed resident physician at the Pittston Hospital and Dr. W. H. Berge, Avoca, has been appointed a member of the hospital staff.

Philadelphia

Chemists to Visit City.—Following the eighth International Congress of Applied Chemistry which opens in Washington, September 4, the members expect to spend several days in Philadelphia inspecting research laboratories and visiting the leading industrial plants of chemical importance in the city. The visitors reach Philadelphia September 16, and will be welcomed at Independence Hall by the mayor.

Personal.—Dr. John M. Baldy has been reappointed a member of the State Board of Medical Education and Licensure. ——Dr. Charles H. Dwyer, who was operated on recently in the Philadelphia Hospital, is rapidly recovering.——Dr. R. Tait McKenzie has executed a large bronze medallion known as "The Joy of Effort" which has been presented to the Swedish nation by the American committee and is now being mounted in granite in the wall of the stadium at Stockholm. It commemorates the fifth holding of the Olympic games.

TENNESSEE

Appeal for Sanatorium.—The new tuberculosis sanatorium of Chattanooga and Hamilton County is almost completed. The estimated expense of the institution is $10,000 a year. Of this amount the county has agreed to pay $5,000 and an appeal is being made to the city to make a similar appropriation.

Personal.—Dr. George H. Bandy, Nashville, has been elected president of the Negro Board of Trade.——Dr. Cooper Holtzclaw, Chattanooga, has returned from Europe.——Dr. J. A. Albright, Nashville, for fifteen years secretary of the State Board of Health, has accepted a position with a pharmaceutical house in Philadelphia.——Dr. Henry M. Green, Knoxville, has returned from Europe.

Hospital Bond.—The Emerson-Hodgson Memorial Hospital, Sewanee, was formally opened, August 6. The building, which is to replace the one burned last year, has accommodation for fifty patients and has been erected at the cost of $30,000.—— Dr. John A. Witherspoon, Nashville, president-elect of the American Medical Association, made an address at Gallatin in the interest of the Galloway Memorial Hospital, Nashville. Sumner County has subscribed about $7,000 toward the hospital.

Trachoma in Nashville Schools.—A vigorous campaign has been started by Dr. E. L. Roberts, public school inspector in Nashville, and Prof. J. J. Keyes, superintendent of education, for the eradication of trachoma from public schools of the city. In this work they have the cooperation of the City Board of Health and Dr. W. E. Hibbett, city health officer. More than 2 per cent. of the white children in the schools are said to be affected with the disease which, however, very rarely attacks colored children.

UTAH

State Meeting Date Changed.—The date of the meeting of the Utah State Medical Association at Ogden has been changed from October 1-2 to September 24-25.

Society Endorses Sterilization of Criminals.—At the August meeting of the Utah County Medical Society held in Provo, resolutions were adopted endorsing the sterilization of those who are criminals or who are hopelessly insane.

Health Department Reorganized.—The reorganization of the health department of Salt Lake City became effective September 1, Dr. Samuel G. Paul becoming health commissioner; Dr. H. B. Sprague, assistant health commissioner, and Drs. R. W. Fisher and Clarence Snow, members of the board of health.

VIRGINIA

Personal.—Dr. William H. Parker has been elected police commissioner of Richmond.——Dr. M. P. Doyle has been elected chief medical inspector for the public schools of Norfolk.——The residence of Dr. W. L. Ould, Concord Depot, was burned to the ground, August 16.

Memorial Association Organized.—The Rawley W. Martin Memorial Association has been organized at Lynchburg for the purpose of erecting a memorial shaft to the late Dr. Rawley M. Martin who was for several years president of the State Board of Health. The following officers were elected: president, Dr. A. W. Terrell, Lynchburg; vice-presidents, Drs. A. R. Long, Lynchburg; L. E. Harvie, Danville; J. W. Whitehead, Chatham; G. Tucker Harrison, Charlottesville; S. C. Reed, Chatham, and R. E. Ramsey, Toshes; Dr. R. S. Martin, Stuart, secretary, and Dr. Randolph Harrison, Lynchburg, treasurer.

GENERAL

Obstetricians and Gynecologists.—The American Association of Obstetricians and Gynecologists will hold its twenty-fifth annual meeting at Toledo, September 17-19, under the presidency of Dr. X. O. Werder, Pittsburgh. The headquarters will be at the Hotel Secor.

Southwest Physicians to Meet.—The seventh annual meeting of the Medical Association of the Southwest, whose membership is made up by physicians of Missouri, Kansas, Oklahoma, Arkansas and Texas, will be held in Hot Springs, Ark., October 8-10, under the presidency of Dr. A. L. Blesh, Oklahoma City. The profession of Hot Springs is making great preparations to make the meeting a professional and social success, and the railroads have offered reduced round-trip rates.

Naval Medical Reserve.—On August 12, the Senate passed without debate a bill to create a medical reserve corps and thereby increase the efficiency of the medical department of the Navy. The institution of this corps will place the medical corps of the Navy in close contact with eminent members of the profession throughout the country as has already been the case in the Army, thus enabling the Navy to call them into consultation, and to profit by their advice when emergencies arise.

Report on the Country's Epidemic Diseases.—From August 21 to 27 no additional cases of plague were reported from Porto Rico. Total number of cases to date is forty-nine. Last case of plague reported from Havana, July 22, terminated fatally July 27; a total of three cases with one death. No plague infected rats have been found in Havana to the date of the last report.——The epidemic of poliomyelitis at Los Angeles has almost subsided, only ten cases being reported in the ten days prior to August 25. Buffalo still has some cases. Cleveland also has a small epidemic which seems to be under control. Many other cities and towns report cases of the disease.——Los Angeles has had small-pox in benign form since March, 1911, with two exacerbations of the virulent form in November and December, 1911, and in July and August, 1912. The disease has attacked almost exclusively persons not vaccinated and is of interest as showing the occurrence of the virulent type in a community where the mild form of the disease had existed for some time.

Canal Zone Sanitation.—The report of Col. W. C. Gorgas, M. C., U. S. Army and chief sanitary officer of the Isthmian Canal Commission, for June shows the lowest mortality rate among employees since the organization of the commission in 1905. The annual average death-rate among employees per 1,000 for June has been as follows:

1905	16.44
1906	41.55
1907	27.53
1908	12.35
1909	9.34
1910	10.66
1911	12.61
1912	6.84

The annual average death-rate per 1,000 in Panama, Colon and the Canal Zone, including both employees and civil population, for June of each year has been as follows:

1905	50.57
1906	51.89
1907	33.45
1908	20.17
1909	16.42
1910	20.38
1911	25.33
1912	22.88

The total number of deaths among employees in June was 28, of which 12 were from violence, and two each from dysentery, malarial fever, pneumonia and tuberculosis. No case of yellow fever, small-pox or plague originated on, or was brought to, the isthmus during the month.

European Physicians' Study Travel Tour in America.—Last week in this department THE JOURNAL gave a list of those in a party which will make a tour of the principal cities of the United States, including a stay in Washington during the International Congress on Hygiene and Demog-

raphy. The detailed itinerary of the trip was given August 24. In this connection it is interesting to give a short sketch of the German Central Committee for Physicians' Study Travels. The idea of medical study travels originated with a French physician, Dr. Carron dé la Carrière, in Paris, in 1899, who was supported in this work by Professors Brouardel, Lannelongue, Landouzy, Fournier and others. In Germany the idea quickly found fertile soil; and Hofrat Gilbert in Baden-Baden assisted by Geheimrat von Leyden, Geheimrat Liebreich, Professor Meissner and Sanitätsrat Oliven became the officers of the organization. Almost all clinicians of German and German-Austrian universities, as well as the heads of the medical departments of all the German states and of Austria-Hungary became members of the executive committee. There are now more than 700 members. Physicians who are occupied at home with their practice can hardly acquire sufficient knowledge of watering-places and health-resorts. Books, lectures and advertising pamphlets give but imperfect ideas of such places. To select a health-resort for a patient the physician needs an accurate knowledge of the local medicinal agencies, the general surroundings and sanitation, the expense and the general atmosphere of the place. The study trips not only enable the physicians to secure this knowledge but also give them an agreeable vacation. The itineraries in Europe have been made out with the idea of economizing time and expense as much as possible. Medical conventions are included in the trips, when possible, as well as provisions for social entertainments and sight seeing. The work of the German Central Committee for Physicians' Study Travels extends now to the study of not only local conditions, climate, etc., of health resorts, but also social, economic, philanthropic, hygienic and civil institutions, factories, laboratories, mining-plants, etc. The German Central Committee in the years from 1901 to 1911 has made twelve trips which included many parts of Europe. This year the trip to America was decided on, whereby opportunity to attend the International Congress on Hygiene was given. This year is the first time that wives and daughters are in the party. The present officers of the German Central Committee are: presidents: Geheimer Ober-Medizinalrat Prof. Dr. Dietrich (Berlin); K. K. Regierungsrat Prof. Dr. Glat (Abbazia); Geheimer Medizinalrat Prof. Dr. His (Berlin); Geheimer Medizinalrat Prof. Dr. von Strümpell (Leipsic). The secretary-general is Sanitätsrat Dr. Albert Oliven.

LONDON LETTER

(From Our Regular Correspondent)

LONDON, August 17, 1912.

Plague in Liverpool Mistaken for Appendicitis

A boy aged 7 was admitted to the Royal Infirmary, Liverpool, and operated on for supposed appendicitis. A gland was removed from the groin and found to contain plague bacilli. The theory as to the source of infection is that the boy was bitten by a flea carried by a foreign rat. The patient lived in the neighborhood of the docks, where there is a likelihood of foreign rats being brought in. When his condition was discovered he was immediately isolated and three days later was removed to an infectious diseases hospital, where he is progressing favorably. The strictest watch is now being kept at the Liverpool hospitals for cases of plague.

The London School of Tropical Medicine

The London School of Tropical Medicine is making an appeal for $500,000 to provide for the equipment and more efficient carrying on of this work. Founded in 1899 by Mr. Chamberlain, then secretary of state for the colonies, it has done remarkable work both in the form of research into tropical diseases and in the training of the medical officers of the colonies. Additional laboratories and residential quarters for at least twenty more students are urgently required. It is desired to raise a sum sufficient so that experts in protozoology, helminthology and entomology may continuously work in the tropics.

The Bicentenary Celebration of the Medical School of Trinity College, Dublin

The bicentenary celebration of the Medical School of Trinity College, Dublin, which took place July 4-6, has been a brilliant success. Delegates from most of the universities in the world—including Japan, Russia, Finland, Sweden, Norway, Denmark, etc.—attended. The universities of Ann Arbor, Harvard and Pennsylvania in the United States, and McGill, Manitoba, Queen's and Laval, in Canada, were represented. Sir William Osler, who represented the University of Oxford, in proposing the toast of "the School of Physic in Ireland," referred to those brilliant days in the early part of the nineteenth century when the school of medicine in Dublin shone out in a way that perhaps no other school in these isles shone out. After mentioning many names he considered that it was no disparagement to those great men to say that the imperishable memories of the Dublin school rested with the names of Graves and Stokes.

The Registration of Births and Deaths With Reference to Infant Mortality

The Royal Statistical Society has issued the report of a special committee appointed by the councils of that society to inquire into the systems adopted in different countries for the registration of births (including still-births) and deaths with reference to infantile mortality. The report covers practically the whole system of registration and calculation of vital statistics. It has been drawn up in four sections: (1) a brief history of registration, (2) the practice of registration in general, (3) still-births and (4) statistical methods. Information has been collected from many sources within the British Empire, from European nations, from Japan, Egypt, the United States, Argentina, Costa Rica, Cuba and Uruguay. The committee states that the answers dealing with the efficiency of registration convey, with comparatively few exceptions, opinions that registration is very fairly complete, in the more settled countries, at least. The registration of still-births is said to be not required by law in the United Kingdom, Jamaica, New Brunswick, New South Wales, New Zealand, Queensland, South Australia, Tasmania, Victoria, Denmark, Mississippi, New Mexico, North Carolina and Virginia. No legislature has, up to the present, enacted any definition of still-birth, and the only guidance afforded to those required to declare and inscribe such births in places in which their registration is compulsory is that afforded by regulations made by the various statistical offices. It is suggested that it is desirable that an international definition of still-birth should be adopted.

The committee remarks that at the present time the principal function of vital statistics is the examination of the causes of unnecessary and preventable waste of life and (but not to so general an extent) sickness. "Vital statistics may, in effect, be regarded as taking the place of laboratory experiments in social physiology and pathology. If such views be accepted as correctly representing the functions of statistics, it is evident that reliable conclusions cannot be obtained unless the basic data are reliable and accurate and the methods of calculations used by different inquirers uniform, or at least strictly comparable." There is a need of greater uniformity in the practice of calculating fertility and mortality rates, as it is only by the comparison of carefully estimated and adjusted rates that questions affecting the health and welfare of nations can be studied. The usual basis on which rates of infantile mortality are calculated is the ratio of deaths during the first year of life to births, and the committee suggests that it is very desirable that the latter value should be universally used. The following conclusions are drawn: (1) that still-births should be tabulated separately, such tabulation to include, if necessary (a) the number of children born alive but registered as dead, and (b) the number born in each successive week or month after the prescribed (earliest) time for registerable still-births; (2) that for general use the infantile mortality-rate should be calculated from (a) the births of children born alive, including, if necessary, those born alive but registered dead, and (b) the number of deaths during the first year of life of children born alive, including, if necessary, the children "presented dead."

Increase of Lunacy

The number of certified insane persons under care in England and Wales on Jan. 1, 1912, was 135,661, or 2,504 more than a year earlier. This increase may be contrasted with that of 2,604 for 1910, of 1,766 for 1909 and of 2,703 for 1908. The average annual increase for the ten years ending Dec. 31, 1911, was 2,495 and that for the five years ending on the same date, 2,335. The increase for 1911 was therefore nine above that of the annual average of the decennium, and 169 above that for the quinquennium. On Jan. 1, 1859, there were known to be under care 36,762 persons certified as insane; as on Jan. 1, 1912, the number amounted to 135,661, there was an increase of 269 per cent. During this period the estimated population of England and Wales has increased 85.6 per cent. The ratio of insane to population has increased in the fifty-three years by 98.8 per cent. The proportion of insane to population now is 1:269. Of the total number of certified

insane persons under care on Jan. 1, 1912, 46.5 per cent. were males and 53.5 per cent. females. These figures show an appreciably higher proportion of females than is found in the general population, in which there are forty-eight males to fifty-two females. In regard to the causation of insanity, mental stress was more prominent in the case of females than males in the proportion of sixty-five to thirty-five. On the other hand, alcoholism was twice as common a factor in males as females and syphilis six times as common.

PARIS LETTER

(From Our Regular Correspondent)

PARIS, Aug. 16, 1912.

The Crisis in Ophthalmology

The serious outlook for ophthalmologists in France was discussed at the recent general assembly of the Syndicat des oculistes français. Dr. Aubineau, of Brest, reviewed the many causes of the present crisis. In the first place, the greater attention given to hygiene in all classes of society tends to decrease the number of cases of ocular disease not only by diminishing the chances of infection and contagion, but also by inclining the individual to seek medical aid for the slightest trouble of the eyes. Cases of conjunctivitis, keratitis and even of iritis are therefore treated at the beginning, when they can be cared for by the family physician. This is fortunate from a broad point of view, but the result is a constant diminution of the number of cases for which the oculist is consulted. Moreover, the surgical side of ophthalmology, which formerly was an important source of revenue, is becoming more and more restricted, whereas in such specialties as otology and rhinology operations grow more frequent. The increase in the number of oculists and ophthalmologists, by encouraging early attention to ophthalmologic troubles, makes surgical cases more rare. Then too, ophthalmologic knowledge is becoming more general in the medical profession. The new program of medical studies makes the ophthalmologic *stage* obligatory, which will make the general practitioner more competent and still further increase the natural tendency to eliminate the specialist. Charlatanism and illegal practice of medicine likewise constitute important factors. According to Dr. Aubineau, the most serious injury to oculists from illegal practice of medicine is caused by the pharmacist, who not only dispenses ophthalmologic remedies but also prescribes and sells glasses. The new profession of pharmacist-optician, springing up in many localities, is detrimental to oculists. The most important cause of the crisis in the specialty is professional overcrowding, general as well as special. There are few or no vacant posts, and the diminution of appointments leads young physicians to abandon the general practice of medicine for a specialty which appears more agreeable and more remunerative. The fact that general practitioners themselves are subject to severe competition tends to make them crowd out the specialist. The number of oculists is increasing so that ophthalmology is even more overcrowded than general medicine. This is a natural result of the present facilities for ophthalmologic studies. Ophthalmologic services, with assistants, interns and externs, are multiplied in the hospitals. Moreover, the *facultés* and *écoles de plein exercise* are continually preparing future oculists.

Some of these factors are due to social and scientific progress and therefore cannot be combated, whatever may be their consequences. Accordingly, Dr. Aubineau believes that professional overcrowding must be opposed by enlightening the public with regard to the actual situation of the physician in general and the specialist in particular.

Tuberculosis as a Reportable Disease

A certain number of senators and deputies have recently formed a parliamentary group on tuberculosis. Among other means of combating this terrible scourge, this parliamentary group demands that tuberculosis shall be made a reportable disease. The Syndicat des médecins de la Seine protests against this obligation, declaring that "reporting tuberculosis would tend to make patients reluctant to place their confidence in the physician, and that the rôle of police officers imposed on the physician would violate professional secrecy." The *syndicat* believes that to combat tuberculosis effectively the government should prevent the renting of insufficiently lighted and aired lodgings, should require the disinfection of lodgings, should strive to improve the general hygiene and the food of working people, and should take measures against alcoholism.

Reorganization of the Service of Military Hygiene

The technical section of the military service of hygiene will hereafter constitute a special establishment directly under the minister of war, and will comprise three services, which will permit the study of all the organic questions of the health department of the army. It will, moreover, have at its command facilities which hitherto were lacking for making numerous researches in regard to military hygiene and epidemiology.

Semicentennial of the First French Ovariotomy

It is now fifty years since the first ovariotomy in France was performed in Strasburg by Dr. Koeberle, who is now living in retirement, at an advanced age. Real courage was necessary at that period to undertake such an operation, which, although it had already been successfully performed in the hands of American, English and German surgeons, was still considered by French surgeons as criminal.

Personal

Dr. Sabrazès, *agrégé* professor at the laboratory of the Faculté de médecine de Bordeaux, has been appointed professor of pathology and anatomy at the same school, in place of Dr. Coyne, who has retired.

Dr. Bué, *agrégé* professor at the Faculté de médicine de Lille, has been appointed professor of obstetrics and pediatrics at the same school.

Adrenal Insufficiency and Typhoid Fever

On July 22, Dr. Emile Sergent, physician of the hospitals of Paris, read a paper on the subject before the Académie de médecine. Dr. Sergent described in 1889, with Dr. Léon Bernard, the now classical syndrome of adrenal insufficiency; he then undertook to prove that adrenal insufficiency may be observed in all infectious diseases and in all severe intoxications. This theory is of great practical importance, involving the use of adrenal medication in such cases. Adrenal insufficiency may be suspected in an infectious disease when agitation, excitement and fever give place abruptly to prostration, lower temperature, and arterial hypotension with the white adrenal line (a dermographic sign considered by Sergent as characteristic of adrenal insufficiency) and a tendency to collapse. Habitual prostration and small pulse are signs of adrenal insufficiency in typhoid. These signs attain their maximum in certain severe typhoids, simulating peritonitis or internal hemorrhage, and disappear rapidly under adrenal opotherapy. Certain complications of convalescence (prostration, anemia, psychasthenia) are due to slow adrenal insufficiency, from subacute inflammation of the adrenals. From these data, Sergent concludes that the systematic employment of epinephrin is justified in all cases of typhoid and that the extracts of the entire adrenal capsule are indicated for the severe complications due to acute adrenal insufficiency. Except in those hypertoxic or hemorrhagic cases which defy all treatment, this method combined with ordinary treatment of typhoid gives the more favorable results.

BERLIN LETTER

(From Our Regular Correspondent)

BERLIN, Aug. 16, 1912.

Personal

Since Professor Matthes of Marburg has declined the appointment as successor of Professor von Lichtheim at Königsberg, Professor Schittenhelm of Erlangen, one of the best-known pupils of Professor Kraus of Berlin, has been selected.

Statistics of Illness in the German Navy

According to a statistical report prepared by the medical department of the imperial naval office on the imperial German marine, there were 28,461 cases of sickness in a strength of about 50,000 men, or nearly 570 per thousand. The fact that on the average each patient was under medical treatment for seventeen or eighteen days, indicates that in many cases the illness was severe and protracted. On the other hand, it is satisfactory to note that in spite of the absolute height of the morbidity, the death rate did not reach one per thousand of the established strength. Unremitting efforts are being made to improve the insanitary conditions of the war vessels which are particularly unfavorable because of insufficient room. Among these is to be reckoned the introduction of tanks for fresh water in the dressing-rooms. The apparatus for seltzer water, which have been of late introduced in

increasing numbers on the battle-ships, are finding constantly greater favor with the crew. In connection with this the decided reduction in the use of alcoholic beverages is to be noted.

A New Cancer Treatment

New methods of cancer therapy follow each other almost daily and particularly since the publication by Wassermann, scarcely a month passes that new methods of cure are not reported in Germany or elsewhere. In the last few weeks a method has been announced by Dr. Zeller, a practitioner in a small place in Würtemberg. Zeller, following a previous recommendation by an English physician, employed silicic acid internally in the form of its sodium and potassium salts, as well as an organic silicate prepared by himself. Further he treated the cancer patients—only surgical cases with external cancer—by brushing with a paste of arsenic, cinnabar and charcoal, according to the recommendation of a chief district physician, Dr. Staudemeyer. When the paste was brushed over an ulcerated breast cancer of the mammary gland, it was noted that the cancer tissue absorbed the chocolate-colored paste, became separated from the healthy tissue and could be peeled out with the hand while healthy tissue remained practically unaffected. Also the swelling of the glands receded distinctly. Zeller has so far treated fifty-seven cancer patients, of whom forty-four are reported by him as cured, three are dead and ten are still under treatment. On the basis of a demonstration which he made and at which Professor Czerny of Heidelberg was present, Obermedizinalrat Scheurlen expresses himself in a medical journal to the effect that good results from the treatment are indubitable. Some of the patients had undergone repeated operations and had been declared to be suffering from an inoperable recurrence. Under Zeller's treatment they present an excellent general condition and neither a return nor a swollen gland is to be found, though it remains to be seen whether or not they are permanently cured. It would be premature as yet to draw final conclusions regarding the method, or for private practitioners to try this new method except in completely hopeless cases.

Death-Rate in the German Army

According to the latest official information the annual death-rate per thousand men in the German army is two, while in the French, Italian and Austro-Hungarian it is four, in the army of the United States six and in that of Great Britain eight. These satisfactory figures are the more notable because for a long time there have not been enough surgeons in the German army. According to a late report 100 places for surgeons are vacant. The favorable mortality figures must be regarded as an evidence of the good hygienic condition of the entire people as well as the excellent sanitary discipline in the army. Indeed, for many years the German sanitary authorities have taken care that the condition of the garrisons and the care of the soldiers and the arrangements of hospitals shall constantly conform in the highest degree to the principles of scientific practice.

Meeting of the German Anthropologists

At the first session of the annual meeting of the German Anthropologic Society early in August, at Weimar, the president, Professor von Luschan, director of the ethnologic museum in Berlin, delivered an opening address which contained a number of interesting ethnologic statements. He established the fact that paleolithic man already presented a number of different types and that European man is a mixture of several races. To the dark-skinned Africans whom many regard as savages we owe the technic which characterized the iron age. Bronze took its origin in Egypt. The question whether we are intellectually advancing or retrograding is of great importance and whether in the mass of the population the capable or the incapable are increasing in numbers. The lowering of the birth-rate and the evil of the two-child system is no longer, as formerly, confined to France, but is becoming manifest in most civilized countries. It is found not only in the upper ten thousand but has spread also to the rural population. The remedy can be found only by careful investigation and here an important task awaits social anthropology, the newest branch of anthropologic science. About $250,000 (1,000,000 marks) is necessary for such a general investigation; it is to be hoped that this sum will be appropriated by the imperial government. The problem of miscegenation is an important question for social anthropology. The mixing of nearly related groups is not unfavorable for posterity. Von Luschan regards the few who express themselves in favor of the culture of a pure blond dolichocephalic type as fanatics. The population of countries which stand on a high plane is composed of many types. It is well known that some colored hybrids are of high intellectual character. Luschan is of the opinion that the Indogermanic, African and East Asiatic groups of mankind formed about 100,000 years ago a single distinct species and that all can mix with each other without disadvantage. He freely admits, however, that other scientists are of different opinions. Statistical inquiries regarding this question will be of great value, particularly with reference to the intellectual and physical peculiarities of half-breeds.

BUDAPEST LETTER

(From Our Occasional Correspondent)

BUDAPEST, Aug. 13, 1912.

Trachoma in a Hungarian County

In the county of Vas, trachoma has prevailed this year to such a degree that the medical board of the county had to ask the minister of public health to appoint two special physicians solely to treat trachoma. Whereas there were in the last year 741 trachoma patients, in the first half of this year they numbered 850. It was discovered recently that trachoma is introduced into the villages chiefly by discharged soldiers, the army being so much infected that, as mentioned in a previous letter (May 4, 1912, p. 1388), regiments had to be formed from trachomatous soldiers and officers for the sake of isolation. Even this measure was of little avail, because the soldiers acquire trachoma voluntarily, running the terrible risk of losing their sight in the hope that they will be discharged from service, because even after the formation of trachomatous companies and regiments, soldiers with severe or incurable cases have to be discharged.

Cholera in Hungary

At this season of the year, supposed cholera cases crop out in every corner of the country. Most of these cases prove to be only severe gastro-enteritis, diarrhea, etc. Should a real cholera epidemic break out, it will not find us unprepared, because every precaution is taken to prevent the spread of an epidemic. As cholera is mostly brought into Hungary from Roumania, in ships coming up from Galatz on the Danube to Hungary, the ship surgeons of the Danube vessels have been instructed to examine every passenger before he comes on board, and also to examine goods carried on the ships, drinking-water, etc. In the ports the passengers are repeatedly examined by the port medical officers. From navigable rivers samples of water are to be sent once every week to the public health ministry, where the water is carefully examined for cholera vibrios.

The Prevention of Senility

Professor Metchnikoff, director of the Paris Pasteur Institute, addresses a letter to a leading Hungarian daily paper (a freemasons' paper, chiefly edited by medical men) in which he publishes the results of his latest investigations. His scientific discoveries, he says, have been so exaggerated in lay papers that he has resolved henceforth to write direct to the public. After mentioning his early theory that the length of life among animals varies inversely with the length of the large intestine, and his later theory that senility is the consequence of the effects of toxins (chiefly phenols) produced by the intestinal bacteria, Metchnikoff refers to experiments in which he actually succeeded in producing in apes senile degeneration by giving them small doses of parakresol (a derivative of phenol) for some time.

These were the fundamental investigations which led to the solution of the question as to how the action of the intestinal bacteria might be checked or lessened. The lactic acid bacillus has proved to be the best for this purpose. An obstacle to the work of the lactic acid bacilli has been their need of sugar, which does not reach the rectum in a usable form. Dr. Metchnikoff and Dr. Wollmann, his pupil, have overcome this by cultivating bacteria which produce sugar from starch. It is now possible to supply a diet capable of supporting the bacillus which limits the action of the intestinal flora.

Of course, concludes Metchnikoff, the struggle against senility is not at all finished. Whether these discoveries will actually tend toward the lengthening of human life is yet a question of the future. But it cannot be denied that a beginning has been made, and we have reason to hope that from these investigations mankind may derive practical benefit.

Marriages

PHILIP GRAHAM REEDY, M.D., McLaughlin, S. Dak., to Miss Rachel Nora O'Neill, of O'Neill, S. Dak., at Fort Yates, N. Dak., August 21.

HUGO BRUNO CHARLES RIEMER, U. S. P. H. Service, Boston, to Miss Lucille Elizabeth Warner, of Ellensburg, Wash., September 2.

T. SELDEN STEWART, M.D., Buffalo, N. Y., to Miss M. Emma Veazy Newnons, of Harrington, Del., at Summit Bridge, Del., August 7.

MAURICE E. BROADAS OWENS, M.D., Long Lake, Wash., to Maysville J. Freeman, of Baltimore, at Spokane, September 1.

LOUIS E. SAUNDERS, M.D., to Miss Edna E. Whitmore, both of Stewartsville, Mo., at Leavenworth, Kan., August 10.

MATHEW JOSEPH HOEY, M.D., Las Cascadas, C. Z., to Miss Maybelle Jane Fowler, at Colon, Panama, August 8.

WILLIAM L. DAVIS, M.D., Elmira, Mo., to Miss Sybil Gertrude Wood, of Sedalia, Mo., at Elmira, July 28.

ALVIS E. GREER, M.D., Houston, Tex., to Miss Claire Eleanor Gadde, of Odanah, Wis., at Chicago, June 27.

JOHN GOLDSBOROUGH SWAILS, M.D., Grafton, Neb., to Miss Hazel Folks, of Maysville, Mo., August 10.

LUTHER SHELDON, JR., M. C., U. S. Navy, to Miss Helen DuBose, of Washington, D. C., August 14.

WILLIAM H. FALLS, M.D., to Miss Cordelia W. Coffey, both of Cincinnati, at Cleveland, August 10.

JOHN J. MULHERON, M.D., Greenfield, Mich., to Mrs. Mary J. Jones, of Albion, Mich., August 21.

STERLING C. BASNEY, M.D., Mont Clare, Pa., to Miss G. R. Parmentier, of Philadelphia, May 20.

LEWIS F. LADD, M.D., Martin, Mich., to Miss Blanch Montieth, of Allegan, Mich., August 15.

TURNER BENTON SMITH, M.D., Clifton, Ariz., to Miss Rebecca Lynch, of Los Angeles, August 13.

Deaths

Paul Emile Archinard, M.D. Tulane University, New Orelans, 1882; professor of diseases of the nervous system in his alma mater; bacteriologist of the State Board of Health; city bacteriologist of New Orleans; one of the founders of the New Orleans Polyclinic; a member of the American Medical Association and for two terms president of the Louisiana State Medical Society; author of standard text-books on microscopy and bacteriology; a member of the Medical Reserve Corps, U. S. Army; died at his home in New Orleans, August 23, from pulmonary disease, aged 53. Dr. Archinard was a good practitioner of medicine and eminent as a neurologist and bacteriologist; he was greatly esteemed and beloved by his colleagues in the medical profession and his untimely death is universally deplored.

Rudolph Wirth, M.D. Pennsylvania Medical College, Gettysburg, Pa., 1859; one of the founders of the Columbus, Ohio, Academy of Medicine; for many years a member of the faculty of Columbus Medical College in the department of nervous and mental diseases; surgeon of the First Ohio Volunteer Cavalry throughout the Civil War; for one term physician to the State Institution for the Deaf; died at his home, June 8, from senile debility, aged 83.

Charles H. Rose, M.D. Eclectic Medical College of Philadelphia, 1855; a member of the Medical and Chirurgical Faculty of Maryland; president of the Talbot County Medical Association; for two terms a judge of the Orphans' Court; a member of the Maryland House of Delegates in 1868 and 1910; a resident of Cordova for fifty-six years; died at the home of his daughter in Centreville, Md., August 23, aged 78.

Sarah E. Furnas Wells, M.D. New York Medical College and Hospital for Women, New York City, 1869; formerly a member of the faculty of her alma mater and president of the Woman's Medical College and Hospital, San Francisco; who had lived in seculsion for several years; died at her home in St. Louis, August 21, from the effects of burns accidentally received, aged 78.

Andrew J. Hobach, who attended, but was not graduated from the Philadelphia College of Medicine and Surgery; an honorary member of the Medical Society of Virginia; surgeon in the Confederate service throughout the Civil War; a practitioner for fifty-five years; died at his home in Roanoke, August 19, from cerebral hemorrhage, aged 80.

Walter Ross Foster, M.D. Jefferson Medical College, 1886; a member of the American Medical Association; physician to St. Paul's Orphan Asylum and the Allegheny County Home, Crafton, Pa.; surgeon to the Pittsburgh Railway Company and the Panhandle System; died in the West Penn Hospital, Pittsburgh, August 23, aged 48.

John M. Wells, M.D. University of Louisville, Ky., 1876; a member of the Kentucky State Medical Association and secretary of the Nicholas County Medical Society; formerly health officer of Nicholas County and secretary of the county board of health; died at his home near Ellisville, August 15, from nephritis, aged 58.

Benjamin Michael Alford, M.D. University of Nashville, Tenn., 1856; surgeon in the Confederate service during the Civil War; for twenty years surgeon of the Southern Pacific and Santa Fe systems at Tulare, Cal.; died at his home in Alameda, August 15, from cerebral hemorrhage, aged 79.

Theodore A. Worrall, M.D. University of Pennsylvania, Philadelphia, 1870; a member of the Medical and Chirurgical Faculty of Maryland; at one time health officer of Cecil County; a veteran of the Civil War; died at his home in Northeast, August 14, from tuberculosis, aged 68.

Henry Stuart Nolan, M.D. Tufts College Medical School, Boston, 1906; of West Somerville; a member of the Massachusetts Medical Society; died in the Deaconess Hospital, Brookline, August 18, from intestinal disease, five months after an operation for appendicitis, aged 29.

Henry Strong Denison, M.D. Johns Hopkins University, Baltimore, 1908; a member of the American Medical Association; died at his home in Denver, August 24, from the effects of bichlorid of mercury accidentally self-administered, aged 29.

Henry Sanford Green, M.D. Miami Medical College, Cincinnati, 1869; formerly a member of the American Medical Association; a member of the Ohio State Medical Association; died at his home in Cardington, August 18, aged 70.

James Polk Sangston, M.D. University of Wooster, Cleveland, 1868; a member of the Medical Society of the State of Pennsylvania; died at his home in McClellandtown, August 17, from angina pectoris, aged 67.

Robert Edward Martin, M.D. Chicago Homeopathic Medical College, 1886; a physician and organist of Milwaukee; died at the home of his mother in Milwaukee, August 21, from heart disease, aged 47.

Willliam Horace Johnson, M.D. College of Physicians and Surgeons, Baltimore, 1873; a member of the Medical Society of the State of Pennsylvania; died at his home in Dudley, August 17, aged 70.

Michael L. Lyons, M.D. Tulane University, New Orleans, 1871; of Crowley, La.; a Confederate veteran; died in the Touro Infirmary, New Orleans, August 19, after a surgical operation, aged 78.

Richard D. Wilson, M.D. Tulane University, New Orleans, 1898; of Phoenix, Ariz.; aged 42; was drowned August 18 while swimming across the Arizona Canal, to recover a bird he had shot.

John Walker Collver, M.D. Rush Medical College, 1864; for more than half a century a practitioner of Welland Port, Ont.; died at his home, August 20, from senile debility, aged 82.

John W. Burchard, M.D. University of Buffalo, N. Y., 1884; a practitioner for more than thirty-five years; died at his home in Bradley, S. Dak., August 15, aged 65.

Louis Frank Lattan, M.D. Rush Medical College, 1891; for twenty years a practitioner of Chicago; died at his home in Detroit, August 15, from pneumonia, aged 45.

J. L. Miles (years of practice, Texas, 1907), one of the oldest practitioners of the state; died at his home in Swan, August 17, from senile debility, aged 86.

R. A. Cook, M.D. Atlanta (Ga.) Medical College, 1877; president of the Board of Education of Social Circle, Ga.; died at his home, August 16, aged 58.

Dennis B. Nisbit, M.D. Medical College of Georgia, Augusta, 1896; of Eatonton, Ga.; died at the home of his brother in that city, August 15, aged 57.

David P. Shattuck, M.D. Hahnemann Medical College, Chicago, 1883; died at his home in Independence, Iowa, August 20, from nephritis, aged 66.

William Armstrong Davison, M.D. Washington University, St. Louis, 1873; died recently at his home in Bridgeport, Cal., aged 62.

Lettie C. Mansur, M.D. Denver College of Physicians and Surgeons, 1896; died at her home in Santa Ana, Cal., in July.

J. Newton Rogers, M.D. University of Michigan, Ann Arbor, 1848; died at his home in Marion, Kan., August 19.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

THE HABITINA FRAUD

A Morphin Mixture Sold as a Cure for Morphin Addiction

Habitina, sold by the Delta Chemical Company of St. Louis as a cure for the morphin habit, was exposed in THE JOURNAL, March 12, 1910. It was one of those vicious mixtures containing large amounts of morphin, which are sold to drug addicts but which, instead of curing, substitute slavery to a high-priced, fancy-named, morphin mixture for that to the simple opiate itself. The Delta Chemical Company did a flourishing business and when investigated by the federal authorities it was estimated that the gross receipts of the company must have exceeded half a million dollars in the six years of its existence. THE JOURNAL of May 11, 1912, chronicled the fact that R. C. Prewitt, M.D., and Ryland C. Bruce, who constituted the Delta Chemical Company, were each fined $2,000 and sentenced to five years' imprisonment at hard labor in the United States Penitentiary, for the villainous business in which they had been engaged. An appeal was taken—of course—and Bruce and Prewitt were released on bonds of $7,000 each. The St. Louis papers of July 12, 1912, stated that Prewitt had obtained legal permission to change his name to Gregg.

At the trial it was brought out that this nostrum was made for the Delta Chemical Company by the Combs Chemical Company of St. Louis, of which Delta E. Combs is president. The federal inspectors reported on Gregg (Prewitt) as follows: He is a graduate of the Barnes Medical College, St. Louis, and for a year before graduation had practiced medicine in Arkansas. In 1900, he was located in Mississippi County, Ark., then went to Forest City of the same state and being unable to obtain a practice moved once more, this time to Little Rock, Ark. There he engaged in the surgical instrument business, on borrowed money, and failed in about a year; he then moved to St. Louis in the fall of 1904 and became a traveling salesman; left that position and went to Cincinnati, O., where he traveled for the Merrill Chemical Co., returning to St. Louis about the middle of 1905. He then entered the employ of a branch of the James Sanitarium, Memphis, Tenn., which was at that time doing a mail-order "morphin cure" business. Later the James Sanitarium discontinued its mail-order work and it was then found in the hands of Bruce and Prewitt who called the nostrum "Morphina-Cura." When the Food and Drugs Act went into effect, they changed the name of their villainous nostrum to "Habitina."

Bruce and Gregg (Prewitt) had maintained up to the time of the trial that they did not send samples of Habitina to any person until they had first received a list of answers to questions regarding the physical condition, nature of addiction, etc., of the prospective patient. This claim was false and was proved to be so by a member of THE JOURNAL staff, who appeared as one of the witnesses for the government. In the course of preparing our first article regarding this fraud the following letter was sent to the Delta Chemical Company:

"Gentlemen: Please send me a sample of your morphin cure, Habitina, also directions for use."

This letter, which certainly gave no information about its writer, brought a reply from the Delta Chemical Company with a sample of Habitina, containing enough morphin to kill six or seven people. A carbon copy of this letter together with the various letters received from the Delta Chemical Company, including the envelopes in which these letters came, also the sample that was sent and the package in which it came, were all turned over to the government by THE JOURNAL, as exhibits in the case. They proved of material value to the prosecution.

The formula of Habitina, according to Delta E. Combs, who made the stuff, is:

Morphin sulphate	16.0 gr.
Heroin	8.0 gr.
Caffein	2.5 gr.
Spartein	0.5 gr.
Pilocarpin	0.5 gr.
Hyoscin, etc.	0.05 gr.
Carbolic acid	0.5 gr.
Alcohol	1.0 gr.
Water to make	1.0 oz.

The testimony of the victims of this preparation was what might be expected. In the report of the post-office inspectors, which is published in a government bulletin, the names and addresses of the various victims are given in full. They will be referred to here, only by initial.

Mr. H. I. C., Missouri, testified that he had been addicted to the Habitina habit for more than six years; that he had purchased Habitina to cure himself of the morphin habit; that at first he took one bottle a week, gradually increasing until during the last year of his addiction he took one $2 bottle daily. He further testified that the stuff injured his eyes and made him a maniac and mentally irresponsible; that he used his utmost endeavor to break himself of the habit, but could not do so; that when under the influence of Habitina he would give away all he possessed. Before his addiction he owned his own home and earned $29 a week as a mechanic. He is now penniless and without work.

Mrs. M. P., Pennsylvania, testified that she purchased Habitina to cure herself of the drug habit; she found it impossible to reduce the dose and increased from a few drops to about half a bottle a day. It destroyed her reason and made her absolutely blind. Later she was treated in a hospital and is no longer a drug addict.

Mr. H. W. D., Iowa, testified that he had been purchasing Habitina by mail for the past five years. He had increased the dose until at the time of the trial he was using half a bottle daily. He stated that he was unable to quit or reduce the dose and was a slave to the Habitina habit.

Mr. W. J. H., Missouri, testified that he purchased Habitina to cure himself of the morphin habit. He increased from a bottle a week to a bottle a day, and at last ordered six bottles at a time, which the company always sent without question. He finally had to go to a reputable sanitarium to be cured. He submitted $289 in checks that he had sent to the Habitina Company, and stated that he had purchased a large additional amount at drug stores.

Mrs. A. S. J., South Carolina, testified that she was 52 years of age and had taken $354 worth of Habitina trying to cure herself of the morphin habit. She said that Habitina destroyed her reason and she had to resort to a sanitarium to free herself from its thralls.

Mrs. G. M. S., Missouri, 26 years of age, testified that she had spent at least $2,300 on Habitina in the past five years trying to cure herself of the morphin habit. For two years past she had been taking $2 worth daily. She testified that she was still a slave to Habitina and had sacrificed position, family, clothes and had even gone without shoes in order to obtain this drug. She is a young woman of good family. Her father was for many years connected with the Department of Justice and her brother-in-law holds a high position in the Federal service.

Other individuals suffering from the Habitina habit were present at the trial but were not called to testify as it was believed that sufficient evidence on the point had been given. The Habitina concern introduced in its defense the testimony of three physicians, all of St. Louis. Dr. Mark Ray Hughes testified that he believed Habitina would effect a cure, if taken as directed. It was shown on cross-examination that he had only treated one habitué by placing the drug in the hands of the patient himself. This was nine years ago and he had never seen the patient since to know whether or not he was cured. Dr. Andrew B. Nichols testified that he believed Habitina would cure if taken as directed, but he stated that he had never known of an addict curing himself. Dr. Charles H. Hughes, while called by the defense, gave testimony that was helpful to the government's case. He testified that if a patient could take Habitina as directed, he might be cured, but that the treatment was neither feasible nor safe.

When Dr. Gregg (Prewitt) was called to the stand he was made to admit the various details that have already been given of his lack of success as a reputable physician. It was further brought out that while connected with the Habitina Company and up to the time of his arrest he was also in the employ of the Glyco-Thymoline Company. In summing up the case, the post-office inspectors, in their report, concluded as follows:

"The conviction obtained in this case has terminated one of the most pernicious and outrageous frauds ever perpetrated on a credulous public, who were not only defrauded out of

large sums of money, ranging from a few dollars to over $2,000 each, but were robbed of health of body and mind; some were rendered blind and some were made maniacs—how many died under the 'treatment' will never be known—but, taking their own testimonials as a source of information, four out of eight have died drug addicts, and out of the thousands of persons they have treated but one witness could be produced by the defendants to testify in behalf of this drug having any remedial properties whatever. These defendants deliberately fostered the most dreadful forms of drug slavery for their personal gain. They made no effort to cure the patient for the blood money thus obtained. They produced no evidence which would traverse the contention of the Government that the whole purpose of the defendants was to substitute for the slavery to the drug purchased by the habitué from the 'corner pharmacist' under the restrictions of state law, the slavery to the same and worse drugs purchased under a disguised name at many times a fair commercial price from the Delta Chemical Co."

Correspondence

The Insanity Problem

To the Editor:—Your editorial on this subject (August 17, p. 545) is most timely. Insanity, criminality and pauperism are on the increase in the United States, and as a large proportion of the insane, the criminal and the pauper elements of our population are aliens, there is nothing astonishing about that fact. For many years this country has been the dumping-ground for the riffraff and scum of Europe, and now we are reaping what we sowed. In our large American cities vice and crime are rampant; murder, arson, dynamiting, burglary, hold-ups, blackmailing, larceny and general dishonesty and graft are the order of the day. New York stands at the head of the list, with one murder daily during July and a startling exposé through the Rosenthal murder of moral rottenness in official life.

The expense of looking after the criminals of this country is enormous. A member of the Court of Pardons of New Jersey has stated recently, in a pamphlet on penology, that it amounts to $1,000,000,000 annually, $114,000 for every hour of the day and night. How much good could be accomplished with so much money devoted to help the really worthy poor, instead of being wasted on a lot of worthless wretches, most of whom are either foreigners or only one remove from foreigners. It would be interesting to know how much it costs every year to support the inmates of our hospitals, orphan asylums, insane asylums, homes for the feeble-minded, etc. The amount runs into the millions, and here again the "undesirable alien" and his progeny are in great measure responsible for this gigantic expenditure.

Why should this country be called on to support the human refuse of every country of Europe? This is a question which, perhaps, some Solomon in our national legislature might be able to answer, if puttering over the tariff or devising means to increase the "pension grab" did not overtax his mental capacity.

Is the medical examination of immigrants anything more than a farce? Would it be possible for the medical examiners at our ports of entry to diagnose incipient or latent disease in the time at their disposal, even if they had *x*-ray eyes and every man were a veritable medical Sherlock Holmes? The medical profession through its representative organizations should protest in no uncertain tones against making this country the dump-heap for the human refuse of Europe and breeding-ground for mental and physical degenerates and criminals. For many years there has been far more attention paid to the breeding of hogs in this country than to the breeding of human beings. Breeders have sense enough to give their cattle the benefit of the law of heredity; but our national legislators probably think—if they think at all—that they can "make a silk purse from a sow's ear," or breed a thoroughbred horse from a jackass.

I hope that your editorial will have the effect of waking up to a proper sense of his responsibility the medical man of this country. G. H. BALLERAY, Paterson, N. J.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

AMBARD'S FORMULA

To the Editor:—In an abstract in the Current Medical Literature department of THE JOURNAL (July 20, p. 229), Ambard's formula for finding the urea index in kidney disease is given. The language seems somewhat ambiguous to me and I do not understand the method of procedure of the test. The formula given is:

$$\frac{Ur}{\sqrt{D \times \frac{70}{P}} \times \sqrt{\frac{C}{25}}} = K.$$

It appears to me that it should be P/70 instead of 70/P, since P stands for the unknown weight of the person and 70 is given as the standard weight of man, as 70 kg. Then in the typical case given,

$$\frac{0.426}{\sqrt{24 \times \frac{70}{72}} \times \sqrt{\frac{22.5}{25}}} = 0.094$$

according to my calculation there is a mistake in the figuring, the square root of 4.4 which is 2.1, having been overlooked. 0.426÷4.4 will give the figure 0.094, but after extraction of the square root of 4.4 the answer is incorrect. Will you kindly explain, in simple language, the entire method of procedure, how to make the test with the patient's blood and urine, and how to calculate the index from the formula. A. A. HIMOWICH, M.D., New York City.

ANSWER.—1. The technic of this test is as follows: The bladder is emptied completely either by spontaneous micturition or in a more accurate way by the catheter. When the bladder is completely empty the exact time is carefully noted. Ten minutes later two wet cups are applied to the patient so as to collect about 40 gm. of blood. At the end of about a half hour the urine which has collected in the bladder is accurately measured and the moment when the last drop flows is exactly noted. Thus are accurately determined (1) the duration of the experiment, and (2) the quantity of urine secreted during this time.

The percentage of urea in blood and in the urine is then determined. The technic followed by Carrion in determining the amount of urea in the blood is as follows: Ten c.c. of serum, or a mixture of serum and corpuscles expressed from a clot, are placed in a conical glass and little by little an exactly equal quantity of a 20 per cent. solution of trichlor-acetic acid is added and thoroughly mixed by stirring with a test-tube [or thick glass rod]. This mixture is then filtered through a single unplaited filter placed in a rapid-filtering funnel. Ten c.c. of the filtrate are placed in an Yvon mercury ureometer (as modified by Desgrez—an instrument of a form not used in America) and 3 or 4 c.c. sodium hydroxid solution, diluted with twice the volume of water, are added to neutralize the acid. Any gas which may have been evolved is allowed to escape and then solution of sodium hypobromite is added and the urea determined by the amount of nitrogen evolved. By calculation from the figures thus obtained the amount of urine which would be secreted in twenty-four hours and the entire quantity of urea are determined. These figures together with the weight of the body in kilograms are substituted for the corresponding letters in the equation

$$\frac{Ur}{\sqrt{D \times \frac{70}{P}} \times \sqrt{\frac{C}{25}}} = K.$$

and the equation solved to determine the coefficient K. In the equation Ur stands for the proportion of urea in the blood, D for the total urea for twenty-four hours in grams, P for the body-weight of the patient in kilograms, and C for proportion of urea in the urine.

With regard to our correspondent's question as to the correctness of the fraction referring to the body-weight, we think a little reflection will show that the formula is correct. The introduction of the body-weight serves to indicate the quantity of urea excreted per unit of body-weight. It is evident, therefore, that to obtain this, D should be divided by the weight or, as expressed in this formula, by the specific body-weight over the average. That is to say, the amount of urea secreted per unit of body-weight would be by $D \div \frac{P}{70}$ which is equivalent to the expression given in the equation $D \times \frac{70}{P}$

With regard to our correspondent's difficulty in the calculation we think it may arise from a typographic error by which

the radical sign is not properly extended to include both the numerator and denominator of the fractions. Thus the last term in the general denominator in the equation should read $\sqrt{\frac{22.5}{25}}$ The equation when solved gives according to our calculation the figure 0.0906 which is slightly different from the figure 0.094 printed in the *Presse Médicale*. It is a singular coincidence that by neglecting to extract the root of the denominators in the equation as written by our correspondent a figure almost exactly the same is obtained.

DETERMINATION OF SUGAR IN THE URINE

To the Editor:—Kindly explain the details of a simple, accurate and quick office method of quantitative estimation of sugar in the urine, using the Haines and Fehling test solutions; also explain the calculation for obtaining the percentage of sugar in the urine.

F. Y.

HAINES' SOLUTION

ANSWER.—Ten c.c. of Haines' quantitative solution are measured into a 100 c.c. Erlenmeyer flask, which is closed with a rubber stopper with two openings. Through one of these is passed a tube bent at a right angle and with the outer end drawn out to a small caliber. Through the other opening is passed the tip of the buret. To the solution in the flask are added about 30 c.c. of ammonia solution (10 per cent.). The mixture is heated to boiling and kept gently bubbling during the operation. The urine, as a rule, should be diluted to from five to ten times its volume and the degree of dilution should be accurately noted. It is placed in a buret the tip of which passes through one of the openings in the stopper closing the flask. When the mixture in the flask reaches the boiling-point the urine is run in somewhat cautiously, the boiling being repeated between the separate additions until the color of the solution has entirely disappeared. The first titration must be considered as a preliminary one, and a second should be made with the same quantity of test solution. In titrating the second time nearly the whole quantity of urine used in the first trial should be added at once and then subsequent additions made drop by drop until the color of the solution has entirely disappeared. In this operation it is important that the flask should remain filled with the vapors of ammonia. If air is allowed to enter the flask the reduced copper will be reoxidized and the accuracy of the titration will be defeated.

In determining the percentage of sugar it should be remembered that the greater the quantity of urine needed to secure the reduction of the copper in the amount of test solution employed, the smaller is the percentage of sugar in the liquid under examination. The Haines' solution is so prepared that if 10 c.c. is reduced by 1 c.c. of urine the percentage of sugar is 1 per cent. Consequently this percentage of sugar should be divided by the number of cubic centimeters of urine which are required to effect the reduction. Thus, if 1 c.c. of urine is required for the reduction, the percentage is 1. If 5 c.c. are required the percentage is one-fifth (0.2).

FEHLING'S SOLUTION

As the best results are obtained if from .5 to 10 c.c. of urine are used in one titration, it is often necessary to dilute the urine to this end; in the determination of this point the specific gravity may serve as a guide. As a general rule, urines of a specific gravity of 1.030 should be diluted five times, and if the density is still higher ten times. Albumin, if present, must first be removed by boiling.

Ten c.c. of Fehling's solution diluted with 40 c.c. of water are placed in a porcelain dish and boiled. While boiling the diluted urine is added from a buret, 0.5 c.c. at a time, when, as a rule, the precipitated red cuprous oxid will settle, so that the white sides of the dish may be seen through the blue field. As the end-point is reached every trace of blue has disappeared and the liquid has a faint yellowish tinge owing to beginning caramelization of the excess of sugar by the caustic alkali.

If any doubt should arise whether the end-point has been reached, tiny droplets of the mixture should be placed on ferrocyanid paper (prepared by soaking filter-paper in a moderately dilute solution of potassium ferrocyanid). If unreduced copper is still present a brown color results. The result is regarded as positive only if the brown develops at once. If it occurs only after several seconds, the final point has been reached or passed.

Prolonged boiling always brings some copper into solution again. It is hence advisable to make two examinations always, the one approximate only, and the second as the final one. The calculation is then made according to the following equation: $y : 0.05 :: 100 : x$; and $x = 5/y$ in which x equals the percentage of sugar and y the number of cubic centimeters of the liquid employed. In case the urine has been diluted the results should be multiplied by 5 or 10 according to the degree of dilution, in order to determine the percentage of sugar in the original urine.

PELLAGRA

To the Editor:—Is there any evidence that pellagra is either infectious or contagious? If so, where can I get it?

F. D. SHEPHERD, Mangum, Tex.

ANSWER.—There is no evidence that pellagra is a contagious disease. No case has been reported, to the best of our knowledge, in which the disease has been conveyed from one person to another. Some theorists have supposed that it is an infection, due to the action of some microorganism, such as a protozoon. No evidence, so far as we know, has been presented to incriminate any particular microorganism. The general belief seems to be that it is due to the use of maize, and many authors believe that the poison is the result of the action of microorganisms on the maize but not on the patient. A discussion of the theories regarding pellagra and the evidence for them can be found in Niles' work on "Pellagra."

A MISPLACED CREDIT FOR A GOOD ARTICLE

To the Editor:—The terse and very sensible quotation on "The Physician as a Business Man," which appears in THE JOURNAL (August 24, p. 620), should, be credited not to the *Delaware State Medical Journal*, but to Dr. William Brady, whose editorial in the *New York State Medical Journal* the Delaware journal republished in full, giving due credit to the source. The editorial in question is so splendid from beginning to end that we desire to give Dr. Brady the credit he deserves.

A. ROBIN,
Editor *Delaware State Journal*, Wilmington.

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF POST-GRADUATE WORK, CONTRACT PRACTICE, LEGISLATION, MEDICAL DEFENSE, AND OTHER MEDICOLEGAL AND ECONOMIC QUESTIONS OF INTEREST TO PHYSICIANS

NEWSPAPER EDITORS ON HYGIENE

Reference has previously been made to the peculiar features of the present popular crusade against common drinking-cups.[1] Although not inspired or directed by any individual or organization, the movement for the abolition of common drinking-cups in public places has in the last two years swept across the entire country. Almost without exception the passage of laws forbidding common drinking-cups on trains and in public buildings has been endorsed by the newspapers. Occasionally some reactionary editor has regarded the subject as a fit one for ridicule or has denounced the awful tendency of the times to interfere with individual liberty. An excellent example of this frame of mind is found in a recent editorial in the Columbus (Ohio) *Journal*. Under the title of "The Microbe Fear," the editor says: "It is against the law to have a common drinking-cup in a railroad train and so a fellow has to travel a long way often without even a drink of water. This is pretty fine-haired hygiene, and the country is getting too much of it."

Evidently the editor of the *Journal* fears that there is danger of the people of his state becoming too clean. Perhaps he would change his views if he could read an editorial in the Norfolk (Va.) *Pilot*, under the title of "Disease in Public Cups." The editor of the *Pilot* does not feel that cleanliness has yet reached the danger mark. He quotes a tourist from New York, describing a scene on a Southern railroad train:

"To my surprise I saw one big black greasy fellow hold back two white women while he took his drink of water from the same cup and from the same water-cooler as the white people were expected to take theirs from." The editor continues: "The common drinking-cup in public places is a source of great danger to the community, not only because

1. The Common Drinking-Cup, THE JOURNAL A. M. A., Sept. 2, 1911, p. 841.

negroes are peculiarly liable to spread disease by infection, but also because the germs do not draw any color-line and are apt to be transmitted from one unhealthy white to another. This is not a race question but a matter of scientific prevention of contagion. . . . This is not a question of sentiment. It is simply a wise precaution of modern sanitary science. Facts prove that disease is propagated by this custom. Law should make such propagation impossible."

A recent editorial in the Zanesville (Ohio) *Signal*, might also be read with profit by the editor of the Columbus *Journal*, as it might help to calm his fears lest we are becoming too dangerously clean a nation. The *Signal* says: "Microscopic examination of twenty-two common drinking-cups taken from public places such as hotels, stores, public schools and public wells, shows that disease-producing bacteria were present on the various cups examined." The bacilli found are enumerated as: diphtheria present in two cups taken from schoolhouses; pus-producing bacilli found on seventeen cups; pneumonia bacilli on three. In the light of this summary the editor's comments appear quite conservative. It seems rational, in the light of an investigation of this character, to forbid the use of the common drinking-cup in all public places, whether on the streets, on railroad cars, in hotels, libraries, or any other place of a public character where the multitude gathers. In view of the general sentiment in favor of increased cleanliness, public as well as personal, the only alternative for those who object to such reforms would seem to be the organization of a National League for Freedom to be Dirty.

Evidently, to paraphrase Sterne's famous remark, "they do those things better in Kentucky." The Louisville *Courier-Journal*, under the title of "The Public Horse-Trough," after stating that the common drinking-cup for human beings has been forbidden by the state legislature, quotes a New York veterinary surgeon as saying that the public horse-trough is one of the most pernicious sources of disease for horses. The *Courier-Journal* continues:

"There has been no agitation of this question in this particular part of the country, but when one comes to think about it the advice is sensible. Horses have their infectious diseases the same as human beings, and some of these diseases are much to be dreaded by those who have any considerable amount of their capital wrapped up in horse-flesh. A drinking-trough where hundreds of horses are watered every day, and where little regard is paid to cleanliness, would seem to be a most dangerous source for the distribution of disease germs."

If this suggestion of the *Courier-Journal* should be followed out and public drinking-troughs for horses abolished, it may be necessary for the conservative horses of Kentucky to leave the state and migrate to Columbus, in a body, in order that they may establish congenial relations with the editor of the Columbus *Journal*.

Finally the Columbia (S. C.) *State Journal*, under the title of "The Medical Trust," discusses the charge made by the united opposition to national and state health legislation, of the existence of a "medical trust." After pointing out that the proposed national department of health would have for its object the prevention of disease and would therefore diminish instead of increasing the revenues of the medical profession, the editor says:

"Cordial advocacy of the project by the medical profession, instead of being cause of suspicion, is rather cause for admiration of that spirit of unselfishness which has always distinguished the physician. This health department plan, in fact, is merely one concrete feature of a comprehensive campaign of health conservation, to which the profession as a whole is heartily committed in disregard of the unfavorable financial reaction on its members which these endeavors must produce. . . . When opponents of the national department of health raise the cry medical trust against it, the public will bear in mind that the ethical physicians supporting the project have not proposed any gigantic scheme based on any particular school of medicine, but have urged merely the gain which could be effected in efficiency and economy, through coordination of cognate governmental agencies for social reform and uplift, intended to bring each individual into physical harmony, as nearly as may be, with his environment and to inaugurate a comprehensive system of health-conservation through disease prevention."

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ILLINOIS: Coliseum Annex, Chicago, September 24-26. Sec., Dr. James A. Egan, Springfield.

IOWA: Capitol Bldg., Des Moines, September 11-13. Sec., Dr. Guilford H. Sumner, State House.

MASSACHUSETTS: State House, Boston, September 10-12. Sec., Dr. Edwin B. Harvey, Room 159, State House.

NEW YORK: September 17-20. Chief of Examinations Division, Mr. Harlan H. Horner, Department of Education, Albany.

Connecticut July Report

Dr. Charles A. Tuttle, secretary of the Connecticut State Medical Examining Board, reports the written examination held at New Haven, July 9-10, 1912. The number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 39, of whom 32 passed and 7 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Yale Medical School (1910) 75.5, 80.6; (1912) 77.8, 83.1, 83.8, 84, 84.8.	1911, 1912	81.8, 81.8,
Georgetown University	(1911)	75.5, 75.
Maryland Medical College	(1912)	75, 75
Baltimore Medical College	(1912)	79.9
Johns Hopkins University (1902) 93; (1909) 79.9;	(1912)	90
University of Maryland (1910) 75.8;	(1912)	82.3
Harvard University Medical School	(1912)	84.9
Tufts College Medical School	(1912)	78.8
St. Louis University	(1912)	80
Columbia University, College of Phys. and Surgs.	(1895)	75.5
Cornell University Medical College	(1910)	82.1
Medico-Chirurgical College of Philadelphia	(1912)	81.8
University of Pennsylvania (1910) 80.5;	(1912)	80.2
Woman's Medical College of Pennsylvania	(1912)	76.4
University of Vermont	(1911)	81.7
McGill University, Montreal, Quebec (1903) 83.7;	(1907)	87.9
FAILED		
College of Physicians and Surgeons, Baltimore	(1911)	68.9
Baltimore Medical College	(1912)	74.2
Columbia University, College of Phys. and Surgs.	(1876)	56
Woman's Medical College of Pennsylvania	(1912)	73.8
Jefferson Medical College	(1912)	68.5
University of the South	(1904)	67.7
Queen's University, Kingston, Ontario	(1907)	68.7

Connecticut Eclectic July Report

Dr. Thomas S. Hodge, secretary of the Connecticut Eclectic Medical Examining Board, reports that at the meeting held at New Haven, July 9, 1912, one candidate, a graduate of Bennett Medical College, 1906, was licensed through reciprocity with Pennsylvania.

Ohio June Report

Dr. George H. Matson, secretary of the Ohio State Medical Board, reports the written, oral and practical examination held at Columbus, June 18-21, 1912. The number of subjects examined in was 11; total number of questions asked, 110; percentage required to pass, 75. The total number of candidates examined was 208 of whom 191 passed, including 9 osteopaths, and 16 failed, including 5 osteopaths. One certificate was withheld. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Rush Medical College	(1912)	87
University of Louisville	(1909)	84.2
University of Michigan, Homeopathic College	(1912)	81.6
Starling-Ohio Medical College (1912) 75.7, 76.6, 77, 77.4, 77.5, 78, 78.3, 79.4, 79.7, 79.8, 80, 80.4, 80.7, 80.8, 80.9, 81, 81.2, 81.2, 81.2, 81.5 81.6, 81.8, 81.9, 82, 82, 82, 82.1, 82.3, 82.4, 82.4, 82.4, 82.5, 82.7, 82.7, 82.7, 82.8, 83, 83.5, 83.5, 83.7, 83.9, 84.1, 84.1, 84.2, 84.6, 85.2, 85.4, 85.5, 86, 86.2, 86.3, 86.7, 87.2.		
Ohio-Miami Medical College (1910) 79.7; (1912) 75, 75, 75, 75.6, 76.7, 76.7, 77.5, 78, 78.3, 79.1, 79.2, 79.5, 80, 80.1, 80.2, 80.3, 80.4, 80.6, 80.6, 80.7, 80.8, 81, 81.2, 81.5, 81.6, 81.8, 82.1, 82.1, 82.2, 82.4, 82.5, 82.9, 83, 83.3, 83.7, 83.8, 83.9, 84.7, 84.8, 85, 85.2, 86.8, 86.9, 87.		
Western Reserve University (1912) 78.3, 78.8, 79, 80, 80.2, 80.3, 80.7, 80.8, 80.9, 81.3, 82, 82.2, 82.2, 82.5, 83.1, 83.4, 83.6, 83.8, 84, 84, 84, 84.6, 84.7, 85.1, 85.2, 85.2, 85.6, 86.7, 86.9, 87, 87.4 87.5, 88.		
Cleveland College of Physicians and Surgeons (1912) 77.4, 77.9, 80.8, 81.3, 82.1, 82.6, 82.9, 83, 84.2, 84.3, 84.8, 85, 85.4, 85.5, 85.7,		
Cleveland Homeopathic College	(1909)	78.2

Cleveland-Pulte Medical College (1912) 75.2, 76.3, 77.5, 77.8, 80.! 81, 81.4, 83.
Eclectic Medical College, Cincinnati (1912) 75.6, 76.2, 76.5, 78.7, 79.5, 80.6.
Toledo Medical College (1912) 75.7, 76.5, 78.8, 78.8, 79.5, 81.5, 84, 86.7.

Miami Medical College	(1890)	76.1
Jefferson Medical College	(1902) 78.3 (1912)	76.1, 80.5
University of Pennsylvania	(1910) 82; (1911)	81.8
University of Pittsburgh	(1911)	78.9
Medico-Chirurgical College of Philadelphia	(1912)	79.5
Hahnemann Med. Coll. and Hospital, Philadelphia	(1911)	77.4
Lincoln Memorial University	(1911)	75.4

FAILED

Cleveland University of Medicine and Surgery	(1890)	53
Starling-Ohio Medical College	(1912)	73.5
Ohio-Miami Medical College	(1912)	71.5, 73
Cleveland-Pulte Medical College	(1912)	69.2, 73.7, 74.4
Eclectic Medical College, Cincinnati	(1911)	71.5,* 73.3
Toledo Medical College	(1912)	74.3
Royal University of Naples, Italy	(1911)	72

* Third examination.

The following questions were asked:

ANATOMY

1. What are the two kinds of bone tissue and where is each one found? 2. What tends to prevent anterior displacement at the elbow-joint? 3. What muscles connect the scapula with the trunk? 4. Describe and locate each of the valves of the heart. 5. Name the visceral branches of the abdominal aorta.

PHYSIOLOGY

1. Name four conditions that influence the composition of the blood in health. Describe such influence. 2. State what you know about the distribution and structure of the capillaries. 3. What purpose is served by the arrangement of valves in veins, and where are they most generously placed? 4. What is the object of respiration? Define complemental, reserve and residual air. 5. What is the condition of the vascular system in asphyxiation. 6. State what you know of the office of the thyroid gland and of the effects on the body of its complete removal. 7. Describe the mechanism of vomiting, and what general muscles are involved in the act. 8. What structures of the kidney are chiefly concerned in filtration? What effect does increased blood-pressure have on the process? 9. What are the principal morbid effects of division of the fifth nerve? 10. To what property does muscle owe its activity? Name four conditions which affect the irritability of muscles, and state how.

CHEMISTRY

1. What are ferments? Name and explain the action of the salivary, gastric and pancreatic ferments. 2. Name two neurotic poisons. Give antidote of each. 2. Name and give antidote of three poisons most frequently used for suicidal purposes. 4. Define atomic weight, molecular weight, acid, base, and radical. 5. Name the principal acids and give source of each. Name the principal alkalies and give source of each. Name four of the principal bases and give source of each. 6. Write the chemical reaction that occurs when bicarbonate of sodium is given for hyperacidity of the gastric juice. 7. How would you distinguish chemically between uric acid and urea? 8. What is catalysis? What is its value in chemistry? 9. Define or explain the term hardness as applied to a potable water. What makes water hard? Give a test for chlorids in water. 10. What are the principal constituents of cow's milk? Give chemical explanation of the souring and curdling of milk.

PATHOLOGY

1. Give in detail the vascular changes in a simple inflammation. 2. What is metastasis? Name three pathologic conditions in which it occurs. 3. Describe a typical lesion produced by the tubercle bacillus. 4. Describe minutely the process of healing in an infected wound of the skin. 5. What is a thrombus? What are its possible terminations? 6. What local defensive measure does the organism use to limit an appendiceal inflammation? 7. Is there any importance to phagocytosis? Why? 8. How would you make a Widal test? 9. On what principle does vaccination against typhoid depend? How is the vaccine prepared? 10. Describe the exudate in a pneumonic lung in the stage of red hepatization.

DIAGNOSIS

1. What indications may be derived from an increased dulness of the cardiac area toward the left and downward? 2. Define râles, mention their typical types and their pathologic significance. 3. Where do you find the normal apex beat and what indications do you derive from its displacement? 4. In what pathologic conditions do you find Cheyne-Stokes breathing? 5. What indication is given by a decreased resonance, dulness in the left axillary line? 6. What diagnostic significance do you derive from an increased resonance on one side of the chest? 7. To what pathologic conditions is a general distention of the abdomen due? 8. State how you determine the shape and size of the liver by percussion. 9. What pathologic significance is given to the absence of the plantar reflex—Babinski phenomenon. 10. In what pathologic afflictions do you find facial paralysis?

PRACTICE

1. Differentiate between infectious and contagious diseases. 2. Give the etiology, symptoms and clinical findings of bronchial asthma. 3. Give the cause of hematuria. How may the source of the blood be inferred? 4. Differentiate between rheumatic fever and pyemia with suppuration. Arthritis and gonorrheal arthritis. 5. Describe procedure in making a physical examination of the abdomen. 6. Give causation, symptoms and treatment of acute cholecystitis. 7. Differentiate coma of cerebral hemorrhage from that of diabetes mellitus. Give treatment for the latter. 8. Give etiology and symptomatology of empyema. 9. Diagnose gastric ulcer. 10. Define and give symptoms, diagnosis and treatment of acute articular rheumatism.

SURGERY

1. Diagnose pleuritic effusion, purulent and non-purulent. 2. Name causes for chronic inflammation of bone. Do they always pass through an acute stage? Are they ever amenable to medical treatment? Give the most common symptom? 3. Give supplementary and surgical treatment for tuberculous knee-joint disease in children. 4 What are the most common complications following amputation? How met? 5. Define coxalgia and give treatment.

OBSTETRICS

1. What symptoms would cause you to suspect ectopic pregnancy? 2. Give diagnosis and management of placenta prævia. 3. Give cause, symptoms and treatment of the various forms of dysmenorrhea. 4. What are the dangers of vaginal examinations during labor and what can be learned by them? 5. Outline your attentions to a new-born child up to the time it is turned over to the nurse.

DERMATOLOGY, SYPHILOLOGY AND DISEASES OF THE EYE, EAR, NOSE AND THROAT

1. Describe seborrhea capillitii (of the scalp) and differentiate it from sporiasis. 2. How do you recognise scabies and how treat it? 3. Describe leg ulcers and give treatment. 4. What is the initial lesion of syphilis? 5. Describe syphilitic roseola and state how it is recognised. 6. Define astigmatism. Give its causes, symptoms and state how to improve the vision with lenses. 7. Describe dacryocystitis, mention its causes and outline treatment. 8. Describe otitis media purulenta and the dangers which may result. 9. Describe catarrhal laryngitis. 10. How do you recognise nasal polypi? Give causes and treatment.

MATERIA MEDICA AND THERAPEUTICS (REGULAR)

1. What drugs would you use in acute articular rheumatism? Write a prescription for each. 2. Name four drugs giving dose of each that are used hypodermically. What precautions should be observed in administering them? 3. Mention indications for the use of arsenic. In what forms is it used? Give dose of each. 4. Explain the action and use of diuretics. 5. Name the preparations and alkaloids of opium. What are the chief indications for their use? State the dose of each. 6. Name the preparations of veratrum viride giving dose of each. Give treatment for overdose. 7. Name three cerebral sedatives. Give dose and use of each. 8. Describe the physiologic action and state the therapeutic use of digitalis. 9. Name two drugs used in the treatment of intermittent fever. Give dose of each and describe the action of each. 10. Is electricity indicated in acute tubercular synovitis? If so, what form would you use?

MATERIA MEDICA AND THERAPEUTICS (HOMEOPATHIC)

1. Give the leading indications for calcarea iodid. 2. Differentiate ipecac and tartar emetic. 3. Differentiate stannum and phosphorus. 3. How much morphin would you give a child under two years of age, hypodermatically? Why? 5. What are the physiologic effects of gelsemium? 6. Give the leading indications for cantharis. Crotalus. 7. Name three remedies having a specific influence on the action of the heart? Give the indications for the first named. 8. Name three remedies having a specific action on the kidneys. Three on the liver. 9. Name three remedies having a specific action on the lungs, on the female genital organs. Give indication for sepia. 10. Is electricity indicated in acute tuberculous synovitis? If so, what form would you use?

MATERIA MEDICA AND THERAPEUTICS (ECLECTIC)

1. Give specific use of veratrum viride. 2. For what is benzoic acid principally used? How does it act? 3. Differentiate between colocynth, dioscorea, nux vomica and magnesium sulphate in their use in abdominal pain. 4. What is the common name of piper methysticum? For what is it used and what is its effect? 5. Discuss the therapeutic uses of collinsonia. 6. Give antidotes to arsenic, carbolic acid, oxalic acid, belladonna and strychnia. 7. Discourse briefly on podophyllum. 8. What are the physiologic effects of gelsemium? 9. From what is thuja occidentalis obtained? Give use. 10. Is electricity indicated in acute tuberculous synovitis? If so, what form would you use?

Rhode Island July Report

Dr. Gardner T. Swarts, secretary of the Rhode Island State Board of Health, reports the written examination held at Providence, July 11-12, 1912. The number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 80. The total number of candidates examined was 15 of whom 8 passed and 7 failed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Boston University	(1900) 81; (1912)	84
Tufts College Medical School	(1912)	82, 83, 83, 85
Harvard Medical School	(1912)	85
Jefferson Medical College	(1912)	84

FAILED

Tufts College Med. School (1903) 79; (1911) 77;	(1912)	77
Harvard University Medical School	(1906)	72
Jefferson Medical College	(1901)	78
Medico-Chirurgical College of Philadelphia	(1912)	77
Laval University, Quebec	(1911)	75

South Dakota July Report

Dr. L. G. Hill, secretary of the South Dakota State Board of Medical Examiners, reports the written and oral examination held at Deadwood, July 10, 1912. The number of subjects examined in was 13; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 11 of whom 10 passed and 1 failed. One candidate was licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
College of Physicians and Surgeons, Chicago	(1912)	82, 89.7
Jenner Medical College	(1910)	80
Northwestern University Medical School	(1910) 77; (1911)	87
Indiana University	(1909)	88
University of Louisville	(1910)	87
Barnes Medical College	(1905)	81
Creighton Medical College	(1912)	82
Jefferson Medical College	(1910)	88

FAILED

Hamline University	(1904)	69

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Creighton Medical College	(1911)	Nebraska

Vermont July Report

Dr. W. Scott Nay, secretary of the Vermont State Board of Medical Registration, reports the written examination held at Burlington, July 9-11, 1912. The number of subjects examined in was 12; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 40 of whom 38 passed and 2 failed. Two candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Yale Medical School	(1904)	85.6
George Washington University	(1912)	81.6
Baltimore Medical College	(1911)	80
Dartmouth Medical School	(1912)	78.1, 80.8
Woman's Medical College of Pennsylvania	(1912)	82.7
Medico-Chirurgical College of Philadelphia	(1912)	80.2
University of Vermont	(1910) 79.6; (1911) 84.5; (1912)	75.2, 75.3, 76.4, 77.1, 77.7, 77.7, 78.3, 78.6, 79.1, 79.5, 79.8, 79.9, 81.1, 81.5, 81.6, 82.1, 82.5, 82.7, 83.1, 84.1, 84.2, 84.7, 84.8, 85.6, 85.7, 85.8, 87.4, 88.1, 88.6.

FAILED

University of Vermont	(1911)	67.8
University of Naples, Italy	(1902)	67.1

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Woman's Medical College of Pennsylvania	(1897)	Dist. Colum.
Laval University, Montreal, Quebec	(1904)	Maine

Washington July Report

Dr. F. P. Witter, secretary of the Washington State Board of Medical Examiners, reports the written examination held at Tacoma, July 6, 1912. The number of subjects examined in was 11; total number of questions asked, 110; percentage required to pass, 75, and not less than 60 in any one branch. The total number of candidates examined was 56 of whom 36 passed, including 1 osteopath, and 20 failed, including 3 osteopaths. The following colleges were represented:

PASSED

College	Year Grad.	Total No. Examined.
University of Colorado	(1909) (1910) (1911)	3
Coll. of Phys. and Surg., Chicago	(1902) (1910) (1912, 2)	4
Chicago College of Medicine and Surgery	(1910)	1
Rush Medical College	(1903) (1912, 2)	3
Northwestern University Medical School	(1911)	3
University of Louisville	(1911)	1
State University of Iowa, College of Medicine	(1909)	1
Kansas Medical College	(1911)	1
University of Michigan, Dept. of Medicine and Surg.	(1908)	1
Johns Hopkins University	(1911)	1
University of Minnesota, College of Med. and Surg.	(1911)	1
St. Louis University	(1908)	1
Washington University, St. Louis	(1911)	1
Missouri Medical College	(1895)	1
University of Oregon	(1911, 3) (1912)	4
Jefferson Medical College	(1911) (1912, 2)	3
University of the South	(1908)	1
Lincoln Memorial University	(1892)	1
Vanderbilt University	(1912)	1
Milwaukee Medical College	(1897)	1
McGill University, Quebec	(1909)	1

FAILED

Illinois Medical College	(1910)	1
College of Physicians and Surgeons, Chicago	(1909)	1
Hahnemann Medical College and Hospital, Chicago	(1906)	1
Chicago College of Medicine and Surgery	(1908) (1909)	2
Bennett Medical College	(1911)	1
Physio-Medical College of Indiana	(1898)	1
University of Michigan, Dept. of Med. and Surg.	(1898)	1
Detroit Homeopathic College	(1908)	1
University of Minnesota, College of Med. and Surg.	(1905)	1
St. Louis College of Physicians and Surgeons	(1893)	1
University of Buffalo	(1888)	1
Eclectic Medical College, Cincinnati	(1911)	1
University of Nashville	(1902)	1
University of Siena, Italy	(1909)	1
University of Berne, Switzerland	(1884)	1
University of Lemberg, Austria	(1905)	1

Book Notices

ESSAI SUR L'ANATOMIE ET LA MÉDECINE OPÉRATOIRE DU TRONC CŒLIAQUE ET DE SES BRANCHES; DE L'ARTÈRE HÉPATIQUE EN PARTICULIER. Par le Dr. P. do Rio Branco (da Silva Paranhos), Ancien Interne des Hôpitaux de Paris. Paper. Price, 22 francs. Pp. 828, with illustrations. Paris: G. Steinheil, 1912.

This work is a comprehensive exposition of the history of the embryologic development and the descriptive and surgical anatomy of the celiac axis. Not content with describing the normal and usual course and the relations of the celiac group of vessels, the author has in addition elaborately and carefully investigated, examined and recorded their many anomalies and unusual arrangements. As the most important branch of the celiac axis, the hepatic artery is given special attention, the major part of the work being given over to the description of this vessel and its branches. The best methods of approaching and ligating the gastric, hepatic and splenic arteries are also fully described. The illustrations are good, many being original.

The author points out that a full knowledge, not only of the usual, but also less common anatomy of the branches of the celiac axis is essential to the surgeon, who may at any time be called on to deal with conditions making such knowledge an absolute necessity. The active surgeon, for whom the work is especially designed, will scarcely find time to search out from the voluminous mass of details the few valuable additions to our knowledge of the celiac axis that the author has contributed.

HENRY PHIPPS INSTITUTE FOR THE STUDY, TREATMENT AND PREVENTION OF TUBERCULOSIS. Sixth Annual Report, 1908-1910. Paper.

This report is the first since the Henry Phipps Institute came under the control of the University of Pennsylvania and contains much statistical material in the form of tables covering the period from Feb. 1, 1908, to Feb. 1, 1910, in addition to a number of papers on various phases of tuberculosis and the results of research work in the Institute. The tables are given without much comment, but present in a graphic way material of extreme importance covering every phase of tuberculosis—patients, housing conditions, contagion, pathology, etc. The editors announce that the article on "The Finding of Alleged Tubercle Bacilli in the Blood" is to be attributed to Dr. E. Burville-Holmes instead of to Dr. Joseph McFarland.

MITTEILUNGEN AUS DER MEDIZINISCHEN FAKULTÄT DER KAISERLICHEN UNIVERSITÄT ZU TOKYO. Volume 10, first half. Paper. 1911.

This collection of papers, published under the auspices of a committee of the faculty of the Imperial University of Tokyo, is the first number of Volume 10 of a periodical which usually contains from two to five similar numbers per volume. The articles are records of high-grade scientific work and are prepared and printed in a form creditable to the Imperial University. The articles in the present number deal with disturbances of the conductive power of the heart, Thomsen's disease, a peculiar bacillus exciting an acute inflammation of the knee and a typical disease of the tuberosity of the tibia in adolescence. The articles are excellently illustrated.

THE INDEX OF OPHTHALMOLOGY AND OTOLARYNGOLOGY. Published Monthly by Dr. Joseph C. Beck, Editor. Volume 1. Price, Complete Index, $5; Ophthalmological Separate, $2.50; Otolaryngological Separate, $2.50. J. C. Beck, 2551 N. Clark St., Chicago.

This book contains the twelve monthly issues of the "Index" for 1911. Articles on ear and throat affections which have appeared in the literature since Jan. 1, 1911 up to and including December, 1911, are listed under various headings, such as "Nasal Cavity," "Septum," "Accessory Sinuses," "Oropharynx," "Larynx," "Mastoid," "Internal Ear," etc. As an addendum appears an authors' index for the entire year, giving the author's name, the month in which the article was listed and in what division it appeared. This is a wealth of information presented in concise form and suitably arranged, for which the otolaryngologist is no doubt thankful.

Medicolegal

Physician Asserting Privilege

(Trieber vs. New York & Queens County Railway Co. (N. Y.), 134 N. Y. Supp. 267)

The Appellate Division of the Supreme Court of New York, Second Department, holds that in this action, brought to recover damages for the death of the plaintiff's husband through the alleged negligence of the defendant, there was no reversible error in sustaining a physician in claiming privilege. The physician, who had attended the decedent some five or six years before the accident, was called as a witness by the defendant and asked what he treated him for at that time. The physician refused to answer, claiming that it would be improper to disclose information acquired by him in his professional capacity. The trial court declined to compel him to answer unless there was an express waiver by the plaintiff; and, while no formal objection was made by the plaintiff, there was at the same time no express waiver made, and the question remained unanswered. It was true, the Appellate Division says, that the privilege claimed by the physician did not belong to him, but to the patient, and could have been waived by the personal representative, the plaintiff. At the same time, though technically the physician was claiming a right which he did not possess, yet a refusal by the court to compel him to answer would not, even on a trial where there had been an express waiver, be reversible error, unless it appeared that the evidence sought was material to the question to be determined, while the question here was not specific enough to appear material on its face. To say that the failure of the court to compel the witness to answer this question was against the ends of justice on this inquisition of damages would require some speculation as to what the answer would have been, and this court is not at liberty to resort to speculation in order to reverse the decision of the court which presided over the inquisition.

Not Consultation of Physician or Being Treated for an Ailment

(Modern Woodmen of America vs. Miles (Ind.), 97 N. E. R. 1009)

The Supreme Court of Indiana holds that an applicant for life insurance had not consulted, nor been treated, by a physician, for any personal ailment within seven years, although the evidence showed that, within that period, in a physician's office, he had told the physician he had a headache, and the physician gave him a dozen trade tablets, for which he made a charge of 15 or 20 cents, the physician asking him no questions about the headache, and making no examination. The court says that it does not believe that the man "consulted" the physician within the ordinary meaning of the word, having neither sought nor received any professional advice, information or instruction. Neither was he treated for any "ailment," within the meaning of that word in the question, the cause of the uneasiness, or affection, apparently having been considered as known by both the man and the physician, and the latter having simply given him some trade tablets. Furthermore, if it did constitute treatment for an ailment, within the meaning of that word as used in the application, the court is constrained to hold that the applicant's answer to the question, under the evidence, did not constitute a breach of warranty. The question called for information covering a period of seven years. It was framed for practical use, to elicit substantial information from people of average memory. Yet the insurer was bound to know that it would be impossible for a person of average memory to give the dates and particulars of each treatment for, or consultation about, every temporary functional disorder he may have suffered during a seven-year period. While the authorities are not in harmony on the proposition, this court is of the opinion that the correct rule applicable to questions of this character is that the disorder, to constitute a breach of warranty, must be of a substantial nature, and not a mere temporary functional indisposition.

Society Proceedings

COMING MEETINGS

Amer. Assn. for Study, etc., of Infant Mortality, Cleveland, Oct. 2-5.
Amer. Assn. of Obstetricians and Gynecologists, Toledo, Sept. 17-19.
American Association of Railway Surgeons, Chicago, Oct. 16-18.
American Public Health Association, Washington, D. C., Sept. 18-20.
American Roentgen Ray Society, Niagara Falls, Sept. 11-14.
Assn. of Military Surgeons of the United States, Baltimore, Oct. 1-4.
Colorado State Medical Society, Pueblo, Sept. 24-26.
Conf. State Bds. of Health of N. Am., Washington, D. C., Sept. 20-21.
Delaware State Medical Society, Wilmington, Oct. 8.
Indiana State Medical Association, Indianapolis, Sept. 26-27.
Internat. Congress on Hygiene, etc., Washington, D. C., Sept. 23-28.
Kentucky State Medical Association, Louisville, Oct. 29-31.
Medical Association of the Southwest, Hot Springs, Ark., Oct. 8-10.
Mississippi Valley Medical Association, Chicago, Oct. 22-24.
National Association for Study of Pellagra, Columbus, S. C., Oct. 3-4.
Nevada State Medical Association, Reno, Oct. 8-10.
New Mexico Medical Society, Roswell, Sept. 12-14.
Pennsylvania State Medical Society, Scranton, Sept. 23-26.
Utah State Medical Association, Ogden, Sept. 24-25.
Vermont State Medical Society, Montpelier, Oct. 10-11.
Virginia Medical Society, Norfolk, Oct. 22-25.
Wyoming State Medical Society, Sheridan, Sept. 17.

MINNESOTA STATE MEDICAL ASSOCIATION

Forty-Fourth Annual Meeting, held at Duluth, Aug. 14-15, 1912
(Continued from p. 745)

Treatment of Hernia in Children

DR. A. J. OCHSNER, Chicago: The development of hernia in children is favored by (1) faulty development of the abdominal wall; (2) insufficient strength in the tissues involved in closing the umbilical, inguinal and femoral openings; (3) abnormal intra-abdominal pressure; (4) unclosed condition of the tunica vaginalis. Causes 1 and 2 are frequently inherited. The abnormal intra-abdominal pressure is due (a) to gaseous distention resulting from improper feeding; (b) to the exertion necessary to evacuate the bladder on account of obstruction due to phimosis; (c) to severe, long-continued coughs; (d) to vomiting; (e) rarely to traumatism or overexertion.

Approximately 95 per cent. of all cases of hernia in children will heal spontaneously if the abnormal intra-abdominal pressure is relieved and the hernial sac is kept empty. This can be accomplished by means of trusses, or much more rapidly in inguinal and femoral hernia, by placing the child in bed with the foot of the bed elevated. The time required usually does not exceed six weeks. Children with a tendency to the formation of hernia should be guarded against developing coughs. Their diet should be given at regular times and chosen with a view to avoiding gaseous distention. Constipation should be prevented. In case of boys, phimosis should be relieved, if present, by operation. Badly nourished and badly cared-for children of the poor should be treated in hospitals, being placed in bed in the Trendelenburg position, the cause of increased intra-abdominal pressure being removed at the same time by proper diet and treatment.

Operation is indicated (1) in strangulated hernia; (2) in irreducible hernia due to adhesions; (3) in case the opening is unusually large in a free hernia, especially if the condition is hereditary; (4) in reducible hydrocele; (5) in cases with undescended testicle unless they show a tendency toward spontaneous cure. Except in Class 3 the operation should consist simply in carefully dissecting out the sac or in certain cases of congenital hernia the neck of the sac, ligating it within the abdominal cavity, cutting away the sac and permitting the stump to retract within the abdominal cavity and closing the skin wound. In Class 3 the Ferguson-Andrews operation is indicated. In Class 5 the Bevan-Ferguson-Andrews operation is indicated.

The recumbent position, with the foot of the bed elevated, is of very great importance in the after-treatment of operative cases as well as in the non-operative treatment in hernia in children. In young children who will not remain in bed with the foot of the bed elevated this position can usually be maintained by applying rubber adhesive straps to both lower extremities and having these held in a vertical position by means of weights and pulleys. If the child can-

not be kept in this position, a well-fitting truss should be worn night and day until there has been no protrusion for at least six months; at the same time the necessary precautions must be constantly taken to guard against abnormal intra-abdominal pressure from any cause.

Blood-Vessel Anastomosis

DR. J. FRANK CORBETT, Minneapolis: My failures have been many in applying the principles of Carrel, and I will enumerate their causes so far as I know: too long storage of blood-vessel; interpolation of adventitia between segments of vessel; failure to remove small clots and fibrin ferment from inside vessels; traumatism of endothelium of blood-vessel by clamp; drying of endothelium resulting from tardy application of petrolatum; too much time in operating. The technic is simple, the principles difficult to master. With a thorough knowledge of these principles, and a complete application of this knowledge in every detail, success should attend the suturing of a normal vessel.

The application of blood-vessel work seems limited to the following fields: (1) repair of blood-vessels accidentally torn and free from thrombosis; (2) artery-to-vein anastomosis where the artery has been destroyed by mechanical or surgical interference; (3) transfusion. In addition, transfusion is applicable only: (1) to cases of severe and extreme anemia from hemorrhage; (2) to cases of uncontrollable hemorrhage from jaundice or hemophilia; (3) to cases of shock.

Unifying the Medical Profession

DR. JOHN A. WITHERSPOON, Nashville: I cannot imagine any body more democratic, having as its units the state organization and the county organization, than the American Medical Association. If it is a democratic body composed of these units, just as sure as we live its objects will be accomplished only when these units form themselves into one single unit, with a singleness of purpose, namely, to bring that great national body up to its true state of usefulness. The American Medical Association ought to stand for everything that is good and great in American medicine, and I am sure that if it is handled properly, if these units will do their part, there will be no such thing as failure and no ground for criticism.

Ten years ago there were four times as many medical colleges in the United States as existed in the world elsewhere. We had at one time 172 medical colleges. A great many of these schools were improperly equipped, both in teaching facilities and in teachers, but that condition has gradually been transformed into a better one, until now forty or fifty of these schools have gone out of existence. The time has come when the great profession of America has risen in its might and determined that no medical school shall live that does not live for a just purpose, namely, to equip young men to assume that most sacred of all obligations, the saving of human life.

With the influence of the American Medical Association coming from the units we shall be able to accomplish the objects we desire. In my judgment it will only be a matter of a few years before we shall be proud we have such an organization as the American Medical Association with sufficient funds to push the great work of doing good among the people, and I ask you in this great progressive state of Minnesota to rise up as your units are called for and meet the demands of your country as you have met them for your state. If you will do that, there will be no slurs on the state of Minnesota.

Operations for Uterine Prolapse

DR. A. W. ABBOTT, Minneapolis: Vaginal repair with plication of the uterosacral and anterior broad ligaments per abdomen has been adopted by me in thirty-five cases in the last four years with no known failures. In case there is much tension on the uterosacral ligaments, a narrow Albert Smith pessary is worn for a couple of months. This operation is applicable either before or after the menopause, is anatomically correct and does not exclude other necessary abdominal operations; the only mutilation is the abdominal incision. It is free from the dragging pains complained of after fixation and in my experience affords a permanent cure.

Acute Appendicitis in Childhood

DR. N. L. WERNER, Red Wing: I had a case of appendicitis in a child which was interesting inasmuch as the symptoms pointed to a kidney lesion rather than to the appendix as the seat of the trouble. The patient, a boy of 12, presented the following symptoms: pain, of acute onset, all over the abdomen, but most prominent in the epigastric region, followed in a few hours by nausea and vomiting, slight tympanites and albuminuria, and some traces of pus in the urine. The right rectus was rigid; the tenderness was not over McBurney's point, but above and behind the superior spine of the ilium. The right kidney appeared swollen and tender. Pains extended down the right thigh, and one prominent symptom was inability to extend the right leg, the leg being held in a flexed position at all times, regardless of the position assumed in bed. There was a leukocytosis of 16,000; operation was delayed until the leukocyte count ran up to 24,000, and the dulness on percussion extended to the edge of the right rectus muscle. The operation consisted of an intra-abdominal incision, and the drainage of a large pocket of pus. In a few days the patient was able to extend the leg completely, the pus disappeared from the urine, and the albuminuria cleared up. Recovery was rapid. I do not believe it is safe to use any other method of treatment than operation in cases in which we are reasonably certain we have an acute infection of the appendix.

Treatment of Septic Endocarditis

DR. SOREN P. REES, Minneapolis: A blood-culture should be the first, and not the last, step in the treatment. It is not only the best means of making an early diagnosis and a probable prognosis, but will assist greatly in the treatment by suggesting appropriate measures, and especially by excluding drugs that consume the patient's strength. Complete rest is the second step. Removal of the primary infection is the next step. This focus can usually be found from the history and by physical examination. The tonic or supportive treatment should combine all that we have learned about the value of sunshine, pure air and selected food in tuberculosis, blood-tonics in anemia, hot water between meals and colonic flushing in auto-intoxication, and light massage and good nursing in malnutrition. Not one but all of these measures in wise combination must be employed. The question of specific medication by means of an autogenous vaccine is still on trial. The principle seems right and some reported cases undoubtedly testify to its value.

The Diagnosis of Diseases Associated With Enlargement of the Spleen

DR. H. Z. GIFFIN, Rochester: Movable and wandering spleens are occasionally seen and on superficial examination may be diagnosed as movable kidneys. The spleen may descend as low as the pelvis, but if the wandering spleen be kept in mind, the organ usually can be recognized by its contour. Two patients with wandering spleen have been operated on at St. Mary's Hospital. One of the patients had been previously operated on elsewhere for movable kidney, apparently as the result of a mistaken diagnosis. The kidney had been stitched up but the spleen remained as movable as before. Tumors of the stomach and intestine will rarely be confusing in the diagnosis of these cases. The spleen may be enlarged temporarily in many of the acute infections of childhood, also in rickets, and other forms of malnutrition in babies. The enlargement of the spleen which occurs with typhoid, generalized tuberculosis, and malaria need only be mentioned. Syphilis of the spleen should always be considered as a possibility, and a Wassermann reaction should not be neglected in any questionable case. Primary sarcoma of the spleen is rare; the growth of the organ is rapid and the clinical picture of an acute splenic anemia is presented. Twenty-four well-authenticated cases have been reported. Pernicious anemia may be associated with enlargement of the spleen, and, if the blood-findings be not typical at the time of examination, a diagnosis may have to be deferred. The spleen is not large, and in this there is a contrast with splenic anemia and Banti's disease.

A review of the diseases associated with enlargement of the spleen impresses one with the fact that exhaustive examinations and complete notes are necessary if we may hope to arrive at a definite grouping of these obscure conditions. Certain rare disorders must be kept freshly in mind. Laboratory findings must be utilized in the differentiation more liberally than is ordinarily necessary.

Rectal Section for Pelvic Abscess in Men

DR. ARCHIBALD MACLAREN, St. Paul: A boy, aged 12, was operated on for perforative appendicitis. At the operation a commencing general septic peritonitis, with much pus in the abdomen, was found. An enlarged gangrenous perforated appendix was removed, two rubber drainage tubes were introduced, one extending into the bottom of the pelvis, and the other to the region of the base of the appendix. That afternoon the temperature went up to 102 F., but soon subsided, ranging between 100 and 101 F. until the tenth day, when it reached 103 F. The pulse in the meantime ranged between 110 and 135. I saw this boy first on the tenth day following this operation. When the anus was exposed, there was bulging at the anterior wall of the rectum; the peritoneal culdesac was distended by a collection of fluid which filled the pelvis. This was immediately opened by a sharp-pointed pair of scissors, used as a dilator instead of cutting. At least a quart of, first, serous pus, and later, thick, very offensive colon pus was evacuated, and a winged rubber tube was inserted. The same afternoon the boy was crying for food and has steadily improved until he is now out of danger and ready to go home. The success or failure in dealing with appendiceal abscess cases depends on vigilance rather than on the methods of operation or drainage.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Archives of Internal Medicine, Chicago

August 15, X, No. 2, pp. 73-168

1 *Influence of Carbonated Brine (Nauheim) Baths on Blood-Pressure. J. M. Swan, Rochester, N. Y.
2 *Clinical Study of Effects of Sleep and Rest on Blood-Pressure. H. Brooks and J. H. Carroll, New York.
3 Arterial Lesions Found in Persons Dying from Acute Infections, and Attempts to Produce Arterial Lesions in Animals by Non-Infectious Toxins. C. Frothingham, Boston.
4 *Some Clinical and Experimental Observations with a Saccharomycete. L. M Breed, Pomona, Cal.
5 Case of "Pancreatic Diabetes Mellitus" by Hermon O. Mosenthal. G. Lusk, New York.

1. Influence of Carbonated Brine Baths on Blood-Pressure.—A very careful clinical study of eighty-one cases leads Swan to the conclusion that carbonated brine baths have no constant effect on the blood-pressure of the human subject. In the cases in which observations were made both before and after each bath the systolic pressure was raised more frequently than it was lowered; so that we may say that the tendency of the baths is to raise the blood-pressure. Although there are cases of high blood-pressure in which a course of carbonated brine baths has been followed by a lower systolic pressure, there are other cases of high pressure in which the pressure has been higher at the end of the course of treatment than it was at the beginning; in one case 26 mm. higher. Although there are cases of low blood-pressure in which a course of carbonated brine baths has been followed by a higher systolic pressure, there are other cases of low pressure in which the pressure has been lower at the end of the course of treatment than it was at the beginning; in one case 20 mm. lower. Swan says that there is no method of determining in advance whether a given treatment will be followed by an elevation or by a fall of pressure.

In the eighty-one cases the systolic pressure was higher at the end of the course of treatment than at the beginning in thirty-nine; lower in thirty-four, and unchanged in eight. In cases of fibroid myocarditis the pressure effect is inconstant. In this series of cases the systolic pressure was lowered more often than it was raised; but the pulse-pressure was raised more often than it was lowered. It seems to Swan a dangerous procedure to use a form of treatment in a case of cardiac fibrosis which may be followed by an increase of systolic pressure of 22 mm., or an increase of pulse-pressure of 32 mm. In cases of parenchymatous myocarditis the effect of the baths on blood-pressure is usually to raise it; but in some cases the baths are followed by a reduction of both the systolic and the pulse-pressures. In cases of dilatation of the heart, cases of hypertrophy and dilatation of the heart, cases of mitral regurgitation, cases of hypertrophy of the heart, cases of tachycardia, and cases of aortic regurgitation, the same uncertainty of results was seen, except that in cases of mitral regurgitation the pulse-pressure was reduced in every one of the five cases; and in cases of aortic regurgitation the diastolic pressure and the mean pressure were reduced in every one of three cases.

In a case of arteriosclerosis an increase of 17 mm. in the systolic pressure and 23 mm. in pulse-pressure might result disastrously. In a case of chronic parenchymatous nephritis an increase of 9 mm. in systolic pressure and of 22 mm. in pulse-pressure may or may not be negligible. In a case of interstitial nephritis an increase of 50 mm. in systolic pressure could hardly be thought desirable. The reduction of systolic pressure in a case of weak heart can scarcely be looked on as a favorable circumstance. The benefit in the subjective symptoms in cases of heart disease which follows a course of carbonated brine baths is not dependent on the influence of the treatment on the blood-pressure.

2. Effects of Sleep and Rest on Blood-Pressure.—Clinical observations appear to justify the discouraging conclusion that sleep-drop cannot as yet be utilized therapeutically to lower the blood-pressure and that although its effect in high blood-pressure cases is more marked than that of any drug in medicinal doses, it cannot be employed therapeutically. In an attempt to apply these observations clinically the authors endeavored to ascertain whether prolonged sleep causes a proportionate lowering of the pressure. Within an ordinary degree at least this does not appear to be the case and attempts to secure even a temporarily lower twenty-four-hour pressure by prolonging or deepening the sleep were apparently without avail. Furthermore, they found that little difference existed in the total twenty-four-hour pressure whether the patient is confined to bed or is allowed to be up and about.

A special series of observations (ten instances) were conducted to determine whether the sleep-drop might not be artificially increased in order to secure a lower pressure curve in concrete cases of high pressure. They obtained no results in this direction, and in cases in which the drop and curve had been previously determined, by the administration of potassium bromid in a dosage of as high as 120 grains the degree or persistence of the fall was not increased. The same lack of result was shown when chloral hydrate in a dosage of 50 grains per night was given, yet the drop and curve were not materially altered.

4. Observations With a Saccharomycete.—During more than two years of clinical laboratory work in Pomona, Breed has encountered a yeast in fifteen individuals sent to her for laboratory diagnosis. The organism was first discovered in a vaginal discharge. Four months later she found similar organisms in the sputum of a child said to have tuberculosis, and again in a culture from the tonsil membrane of a child supposed to be suffering from diphtheria. The fourth time she encountered this fungus was in the sputum of a patient with a pulmonary lesion resembling lobar pneumonia in the early stage of resolution. In this case repeated examinations of the sputum failed to reveal any tubercle bacilli and the tuberculin test was negative.

To ascertain what was causing the symptoms Breed made cultures from the sputum and each time got a pure growth of an organism which she identified as a saccharomycete and which gave the same results culturally and with animal

experimentation as did the fungus found in the vaginal discharge in the first case. This organism resembles the *Saccharomyces cerevisiæ* both culturally and morphologically, but the latter on all culture media grows less profusely and is less spherical. It is about the size of a red blood-corpuscle, possesses a double-contoured capsule and contains fine granules and refractile bodies like fat or vacuoles. Old cultures show lessening of granules and extension of vacuoles, and numerous empty capsules. It grows by budding and possesses a nucleus which can be demonstrated by special staining. It was mixed with other organisms in most cases, but has been found as the only apparent cause of infection in a few patients in whom disappearance of the organism has been followed by alleviation and disappearance of the symptoms. Autobacterins made from this yeast organism have seemed to cause some improvement in three cases and an exacerbation of symptoms in one. The most benefit has been derived from the use of the iodids in large doses. An extract prepared from this saccharomycete gave a slight reaction in a skin test on two patients. The serum of four patients gave a positive agglutination test for the yeast.

Journal of South Carolina Medical Association, Seneca

July, VIII, No. 7, pp. 187-217

6 Medical Ethics. D. Furman, Greenville.
7 Medical and Surgical Treatment of Gall-Stones. J. Graham, Durham, N. C.
8 How Long Has Pellagra Existed in South Carolina? J. W. Babcock, Columbia.
9 Contagiousness of Laryngeal and Pulmonary Tuberculosis. W. P. Porcher, Charleston.

August, VIII, No. 8, pp. 218-241

10 Practical Method of Infant-Feeding. S. R. Lucas, Florence.
11 Bronchoscopy. E. W. Carpenter, Greenville.
12 Rôle of Drainage. H. W. Rice, Columbia.

Boston Medical and Surgical Journal

August 15, CLXVII, No. 7, pp. 207-238

13 Medicine and Humanity: Physician as Promoter of Civilization. J. C. Berry, Worcester, Mass.
14 Present Knowledge of Physiology and Chemistry of Gastric Digestion as Applied to Vomiting in Infancy. A. C. Eastman, Springfield, Mass.
15 *Pneumonia Not a Rare Complication of Heat Prostration. W. D. Reid, Newton, Mass.

15. Pneumonia as Complication of Heat Prostration.—In 158 cases of heat prostration treated at the Boston City Hospital July 2-13, 1911, Reid found seventeen cases of pneumonia. This makes it a complication in about 10.7 per cent., a figure of such size that he feels sure that physicians should take it into consideration in giving a prognosis of any heat case. Nine of the seventeen patients died. Heat exhaustion, ten cases, one pneumonia with fatal result. Heat prostration, eighty-eight cases, pneumonia ten, deaths two. Heat stroke, sixty-two cases, pneumonia six, all fatal. There were forty-four deaths from all causes and nine from pneumonia. Therefore, pneumonia caused one-fifth of all the deaths. Lobar pneumonia: seven cases, two deaths. No cases after heat stroke. Usually affected one of the lower lobes. Incubation one to four days. Bronchopneumonia: ten cases, seven deaths. This was the only type following heat stroke and all were fatal. Three out of the four following heat prostration recovered. One or both lower lobes were the only areas involved. Incubation one to six days. Sex shows no marked difference in results. The greatest number of cases occurred between 20 and 30 years, but the severest mortality was in the decade 50 to 60 years. Alcohol and arteriosclerosis were fatal complications. Erysipelas and empyema necessitans were two sequelæ.

Ophthalmology, Seattle

July, VIII, No. 4, pp. 461-636

16 Arteriosclerosis of Retinal Vessels (Angiosclerosis). W. L. Oatman, New York.
17 Treatment of Trachoma with Radium. Use of Radium-Coated Celluloid Plates for This Purpose. C. H. May, New York.
18 Two Cases of Retinal Detachment in Myopes, Cured by Simple Sclerectomy. P. Bettremieux, Roubaix, France.
19 Metastatic Purulent Ophthalmia. F. W. Alter, Toledo, Ohio.
20 Sympathetic Iridocyclitis Following Cataract Extraction, with Report of Case. A. Bray, Philadelphia.
21 Tripling Distance of Test Cards by Catoptrics. J. N. Rhoads, Philadelphia.
22 Alternative to Strabismus. A. A. Bradburne, Manchester, England.
23 Pathologic Conditions of Eye Secondary to Disease of Lymphatics of Neck and Throat. E. W. Alexander, San Francisco.
24 Rational Method of Removing Fragments of Iron from Interior of Eye. F. W. Lamb, Cincinnati.

Canadian Medical Association Journal, Toronto

August, II, No. 8, pp. 653-750

25 Treatment of Fractures of Long Bones. R. J. Manion.
26 Labyrinth Tests. J. P. Morton.
27 *Pleurisy in Children. M. Mackay, Sherbrooke, Quebec.
28 *Diet in Tuberculosis. W. B. Kendall, Gravenhurst.
29 Revolver Bullet in Chiasma: Consecutive Binocular Blindness. J. N. Roy, Montreal.
30 Does a Human Tick-Borne Disease Exist in British Columbia? J. L. Todd, Montreal.
31 Some Experiences with Radium. G. S. Ryerson.

27. Pleurisy in Children.—Mackay says that any child that comes under the physician's care with a primary pleurisy should be considered as a possible, nay more, a probable, victim of tuberculosis, and should be treated accordingly. There is no use in telling the parents that the child has "weak lungs" and that they must be careful that it does not "catch cold." Give explicit directions and leave nothing to chance. Correct all abnormalities, such as nasal obstruction, prohibit school for a prolonged period, unless the education can be carried on in the open air; and with this encourage out-door games rather than the frequency of poorly ventilated places of amusement. Fresh air is to be prescribed day and night, and a personal inspection of the sleeping apartments should be made in order that a practical demonstration may be given. If possible the residence should be located in the country or open suburb. Give definite rules as to the quality as well as the quantity of food; too much knowledge is taken for granted in this subject; be precise. Let the clothing be warm, yet light and comfortable. Explain the methods of judicious "hardening" by means of cool sponging of the neck and chest. Forbid undue exertion. Last, but not least, impress the parents with the idea that the child must be taught self-restraint and unselfishness. This point of a physician's advice is not sought, and is seldom given, but it should not be omitted.

28. Diet in Tuberculosis.—Forced feeding in the treatment of pulmonary tuberculosis is not considered essential. Great gains in weight should not be sought, but an endeavor made to secure a gradual increase in the patient's weight up to a point slightly above normal. A lower protein content is better toierated than the amounts now usually given. The partaking of meals should be under close supervision, with rest before and after meals enforced. Constant attention must be given to the question of proper proportions of food elements. Cheerful and contented patients are more likely to be hearty eaters, and to progress favorably, than those who worry. Eggs and milk are not indispensable in the dietetic management of tuberculous patients. Lunches should not be given between meals unless there is a special reason. It is a hardship to advise patients to procure food, the price of which is almost prohibitive, when a diet of equal or greater nutritive value can be purchased for less money.

Journal of Cutaneous Diseases, New York

August, XXX, No. 8, pp. 461-513

32 Erythema Ab Igne. M. B. Hartzell, Philadelphia.
33 Experience with Noguchi's Luetin Reaction. H. Fox, New York.
34 Alopecias in General, with Special Reference to Hitherto Undescribed Form of Baldness, "Alopecia Indurata Atrophica." R. L. Sutton, Kansas City.

Interstate Medical Journal, St. Louis

August, XIX, No. 8, pp. 657-738

35 Precautions in Use of Tuberculin in Therapy. F. M. Class, New York.
36 When and How to Use Digitalis. A. E. Taussig, St. Louis.
37 Variations in Clinical Picture of Gastric Ulcer. W. F. Cheney, San Francisco.
38 Use and Abuse of Ligamentum Teres Uteri. F. W. Bailey, St. Louis.
39 Chronic Universal Perihepatitis. R. W. Wilcox, New York.
40 Interpretation of Precordial Pain. J. M. Patton, Chicago.

New York Medical Journal

August 17, XCVI, No. 7, pp. 305-360

41 Prevention of Causes of Insanity. A. J. Givens, Stamford, Conn.
42 Newer Teachings of Diseases of Alimentary Canal. M. I. Knapp, New York.

43 Commoner Contagious Diseases of Childhood. C. Herrman, New York.
44 *Glycyltryptophan Test. G. A. Friedmann, New York.
45 *Prognosis of Tuberculosis of Larynx. S. von Ruck, Asheville, N. C.
46 Pathology of Chorea. F. A. Hulst, New York.
47 Chorea. F. C. Eastman, New York.
48 Proteins. D. D. Van Slyke, New York.

August 24, XCVI, No. 8, pp. 361-408

49 Inheritance of Acquired Characters. J. Wright, New York.
50 Health Conditions in Canal Zone. S. H. Brown, Philadelphia.
51 Fee Book of an Irish Physician of Seventeenth Century. J. J. Walsh, New York.
52 History of Surgical Hemostasis. P. C. Borden, Washington, D. C.
53 *Some Experiences with Lessilur-Prirey Test. B. G. R. Williams, Paris, Ill.
54 Poisoned Blood-Stream. L. A. Merriam, Omaha, Neb.
55 Ten Sex Talks to Girls. I. D. Steinhardt, New York.
56 Technic of Radiography. J. Friedmann, New York.

44. Glycyltryptophan Test.—In making a resumé of twenty-one cases which he reported in a previous communication, with the nineteen reported here, Friedmann has only once in his series of cases found the glycyltryptophan test positive in benign pyloric obstruction. This occurred with an enormous amount of sarcine in the contents of the stomach on fasting. On the other hand he found it frequently positive in gastric cancer. This gives value to the test, but it cannot be considered pathognomonic. A case in which a positive glycyltryptophan test only should lead one to suspect gastric cancer, Friedmann has not observed so far. The fact that in no case of anacidity, except cancer, a positive reaction has been obtained seems to speak in favor of the test. The relative value of the test is evident. The tryptophan test without glycyltryptophan is no longer worthy of serious consideration.

45. Tuberculosis of Larynx.—It is emphasized by von Ruck that tuberculous changes are present in the larynx of patients suffering from pulmonary tuberculosis much more frequently than is generally recognized. The disease in the larynx in its early stages causes, as a rule, no definite or but slight subjective symptoms. For this reason the physical examination of every tuberculous patient should include as much as a matter of routine the inspection of the larynx as an examination of the chest. Slighter degrees of thickening of the mucosa which many observers are willing to accept as catarrhal are not infrequently tuberculous in nature, and may well suggest to the laryngologist who notes them in the course of his routine practice, the propriety of a physical examination of the chest. Finally the prognosis of tuberculosis of the larynx in the earlier stages is no worse than that of the disease in the lungs.

53. Lessilur-Prirey Test.—Williams has applied the tuberculous albumin reaction test as a routine procedure to all sputums examined, provided a sufficient amount of the sample was available. Of these, the results of fifty-one could be checked with clinical as well as microscopic findings. In other words, some knowledge of the symptoms and signs were held in each case; and a diligent search was made for the bacillus of Koch and other suspicious microscopic elements. He has concluded that while the positive test does not signify that every sputum is tuberculous, such would seem to be the case if the clinical data put the patient into the chronic class. In other words, the test is sometimes positive in acute bronchitis, and usually positive in croupous pneumonia. On the other hand, he has been unable to find albumin in chronic bronchitis, bronchial asthma and emphysema. In this series of cases, he met no sputums of bronchiectasis, gangrene or nontuberculous abscess, and is, therefore, unprepared to give advice concerning the possible presence of the reaction in such cases. He has modified the original test by substituting sulphosalicylic acid for the heat and nitric acid when testing for albumin. This is important if the amount of albumin is small, as the sulphosalicylic acid is a more delicate reagent. In a large test-tube, 5 drams of physiologic salt solution, 5 c.c. of sputum and 5 drops of acetic acid are well shaken for five minutes. The mixture when homogeneous, is filtered through paper and the filtrate is tested for serum albumin by any of the methods used in the identification of albumin in urine.

New York State Journal of Medicine, New York

August, XII, No. 8, pp. 411-478

57 Vertigo from Standpoint of General Practitioner. C. G. Stockton, Buffalo.
58 Ocular Vertigo. P. Friedenberg, New York.
59 Labyrinthine Vertigo. P. D. Kerrison, New York.
60 Vertigo Due to Middle-Ear Causes. J. F. McKernon, New York.
61 Medical Expert Testimony from Lawyer's Standpoint. W. A. Purrington, New York.
62 Medical Expert and Proposed Changes in Law Governing Defense of Insanity in Homicide Cases. A. C. Brush, Brooklyn.
63 Nervous and Mental Symptoms Due to Disturbed Circulation, with Illustrative Cases and Treatment. F. H. Stephenson, Syracuse.
64 Gastric Neurasthenia and Abdominal Ptoses. B. C. Loveland, Syracuse.
65 Further Immunologic Studies in Chronic Pneumococcus Endocarditis. E. C. Rosenow, Chicago.
66 Bismuth Paste, Its Uses in Surgery. E. G. Beck, Chicago.
67 Case of Bismuth Poisoning. Employment of "Bryant Bull-Dog." Recovery. W. C. Cramp, New York.
68 Clinical Vagaries in Some Forms of Liver Disease. N. E. Brill, New York.
69 Acute and Chronic Congestions of Liver. B. W. Stearns, Unadilla.
70 *Hyperacidity. G. R. Lockwood, New York.
71 Plea for Early Diagnosis in Surgical Affections. A. H. Traver, Albany.
72 Only or Favorite Child in Adult Life. A. A. Brill, New York.
73 Toxemia of Pregnancy: Treatment. W. M. Brown, Rochester.
74 Lateral Curvature of Spine. W. Truslow, Brooklyn.
75 Cardiac Sequelæ of Tonsillar Infection. J. R. Wiseman, Syracuse.
76 Alopecia Areata: Its Causative Factors and Therapy. P. E. Bechet, New York.

70. Abstracted in THE JOURNAL, May 11, p. 1474.

Archives of Diagnosis, New York

July, V, No. 3, pp. 209-308

77 Uses of Whispered Bronchial Voice. M. Manges, New York.
78 *Value of an Antiputrefactive Diet in Differential Diagnosis of Conditions Producing High Blood-Pressure. E. E. Cornwall, Brooklyn.
79 *Fat-Heart: Aid to Its Early Recognition. H. Stern, New York.
80 Clinical Significance of Albumin Reaction in Sputum. M. Fishberg, New York.
81 *Modern Methods of Diagnosis. M. H. Fussell, Philadelphia.
82 Mental Factor in Diagnosis and Treatment of Functional Diseases. B. Sidis, Portsmouth, N. H.
83 Diagnosis of Gastric and Duodenal Ulcer. W. G. Morgan, Washington, D. C.
84 Diagnostic Points in Gastro-Enterology. J. W. Weinstein, New York.
85 Dilatation of Ascending Colon. J. M. Bell, St. Joseph, Mo.
86 Functional Albuminuria from Diagnostic and Prognostic Point of View. I. I. Wolf, Kansas City, Mo.
87 Diagnostic and Prognostic Significance of Leukocytes in Urine. C. Posner, Berlin.
88 "'Tis the Little Things That Count." B. L. Arms, Boston.

78. Antiputrefactive Diet.—When we give the antiputrefactive diet in a case with persistent high blood-pressure and the tension returns nearly to the normal and stays there, Cornwall says we can, as a rule, exclude any considerable amount of chronic nephritis or arteriosclerosis. When the administration of this diet, though it may be followed by great improvement in the other symptoms, fails to bring about much reduction of the blood-pressure (fails to reduce it to much below 200 mm. Hg), we can be reasonably sure that advanced nephritis is present or sclerosis of arteries supplying regions of the body which are of vital importance. When the administration of this diet brings about a notable reduction of the blood-pressure, but still leaves it considerably above the normal, considering the patient's age, we may suspect arteriosclerosis or an early stage of chronic nephritis. The light which the antiputrefactive diet throws on the diagnosis of conditions accompanied by high blood-pressure makes it very much easier to interpret the other signs and symptoms presented by those conditions; and the administration of this diet is not only valuable as a diagnostic procedure, but it is, in general, the best treatment for those conditions.

79. Fat-Heart.—Stern has found a very simple sign, not heretofore pointed out as such, which, he says, is almost pathognomonic of fat-heart even at a period when other indications of its presence are still wanting. This sign, in brief, is the following: Normally the heart-sounds are less distinctly audible when an individual is in the recumbent or reclining than when in the erect position. The increase in loudness and sharpness of the heart-sounds when standing is especially noticeable after moderate bodily exertion. On the other hand, in the presence of fatty overgrowth of the heart, this increased audibility of the cardiac sounds when

in the upright position (and after moderate exertion) either does not ensue at all or only in an insignificant degree.

81. **Modern Methods of Diagnosis.**—The albumin reaction of sputum Fussell has found to be a useful test in cases suggestive of pulmonary tuberculosis and often of assistance when the microscope failed to reveal tubercle bacilli. A positive albumin reaction, he says, is not always decisive, because many diseases, not at all tuberculous in character, may show albumin in the sputum. A negative reaction, when repeatedly found during several examinations, from specimens of sputum carefully collected, excludes tuberculosis. In cases of tuberculosis, in which the albumin reaction was positive but has become negative for some time, we may conclude that the process of cicatrization of the pulmonary lesion is progressing favorably, even when the physical signs are slow in disappearing. The albumin reaction has a prognostic value. It gives us an opportunity to follow the progress of the tuberculous process. Whenever albumin makes its appearance in a case in which the reaction was negative for some time, there is surely to be found an acute exacerbation, or an extension of the lesion in the lung. In pulmonary emphysema a positive albumin reaction appears to be an indication of cardiac dilatation, thus indicating the proper treatment to be pursued.

Journal of Missouri State Medical Association, St. Louis

August, IX, No. 2, pp. 43-72

89 Report of Committee on Cancer Investigation. F. J. Lutz, St. Louis.
90 Cancer Research. M. Pitzman, St. Louis.
91 Cancer of Stomach. J. F. Binnie, Kansas City.
92 Surgical Treatment of Gastric and Duodenal Ulcer. W. Bartlett, St. Louis.
93 *Multiple Primary Carcinoma of Jejunum. F. W. Bailey, St. Louis.
94 Head Noises or Tinnitus Aurium. J. S. Weaver, Kansas City.

93. Abstracted in THE JOURNAL, July 5, p. 59.

Virginia Medical Semi-Monthly, Richmond

August 9, XVII, No. 9, pp. 209-236

95 Clinical Value of Polygraph. P. S. Roy, Washington, D. C.
96 Inguinal Hernia. L. Sexton, New Orleans.
97 Surgical Shock. L. H. Reichelderfer, Washington, D. C.
98 Postpuerperal Conditions Simulating Puerperal Fever. G. Baughman, Richmond.
99 Nervous Manifestations of Pelvic Disease. W. H. Smith, Goldsboro, N. C.
100 Repair of Relaxed Vaginal Outlet. S. N. Michaux, Richmond.
101 Perforation of Uterine Wall with Injury to Intestine; Resection of Intestine. C. S. Lawrence, Winston-Salem, N. C.

Annals of Surgery, Philadelphia

August, LVI, No. 2, pp. 201-376

102 *Value of Direct Gastroduodenoscopy in Affections of Stomach and Duodenum. T. Rovsing, Copenhagen.
103 *Conservative Treatment of Giant-Cell Sarcoma, with Study of Bone Transplantation. J. C. Bloodgood, Baltimore.
104 *Radical Operation for Relief of Cancer of Rectum and Rectosigmoid. W. J. Mayo, Rochester, Minn.
105 Nephrectomy. A. G. Gerster, New York.
106 Diagnosis of Renal Tuberculosis, Indications for Nephrectomy in Its Treatment and Technic of Operation. P. M. Pilcher, Brooklyn.
107 Acute Hematogenous Infection of One Kidney in Person Apparently Well. G. K. Dickinson, Jersey City, N. J.
108 Acute Unilateral Infection of Kidney. F. W. Rinkenberger, Tacoma, Wash.
109 Adherent Hernias of Large Intestine. J. L. Rahsohoff, Cincinnati.
110 Apparatus for Intratracheal Insufflation. H. H. Janeway, New York.
111 *Picric Acid as Skin Disinfectant. O. W. H. Mitchell, Columbia, Mo.

102. **Direct Gastroduodenoscopy.**—Rovsing asserts that direct gastroduodenoscopy enables us to give the exact diagnosis in cases of disease in the stomach and the duodenum in those difficult cases where all other diagnostic expedients are insufficient. It is of special importance in three directions: 1. In the numerous cases where the symptoms speak in favor of ulcus, but where inspection and palpation of the stomach show nothing of the sort. Here gastrduodenoscopy removes all doubt, and sometimes shows us that the supposed ulcer does not exist, whereby the patient is spared a senseless and injurious encroachment; and sometimes it proves the presence of the ulcer, its seat and its nature. 2. For the differential diagnosis between ulcers in the stomach and the duodenum. 3. By rendering possible a direct attack on the ulcer, where one had formerly to content oneself with gastro-enterostomy because the seat of the ulcer was unknown. This is of exceptional importance with ulcers, the hemorrhages from which constitute a menace to life, whether they be permanently oozing, small bleedings, or violent, acute hemorrhages. Nor, naturally, is this method infallible; as with it also one may sometimes overlook a small ulcer which has concealed itself in the folds of the mucous membrane, and may sometimes interpret a depression as being the edge of an ulcer or something similar, but this is of rare occurrence.

103 and 104. Abstracted in THE JOURNAL, July 27, pp. 301 and 302.

111. **Picric Acid as Skin Disinfectant.**—Up to the present time the picric acid solutions, in the main 1 per cent. alcoholic solutions, have been used in seventy-eight cases at the Parker Memorial Hospital. When a patient can be prepared over night he has the usual shaving and soap and water scrub, with a saturated watery solution of picric acid applied over the field. Before operation he is washed again with soap and water and the alcoholic solution is applied. In cleansing a scalp or sterilizing an infected wound it has been found most efficient and reliable, which is no doubt due to its high germicidal action and its great power of penetrability, as Mitchell has shown by his experiemnts. There has been no case of wound infection since the method has been in use. The only objection to it is the intense and tenacious staining, and on two occasions when the wound edges were not perfectly coapted there were one or two small points of delayed union due to small coagula of serum between the edges of the wound. These coagula were cultured and found to be asolutely sterile. This high power of coagulating serum makes it necessary to make close and perfect approximation of wounds and leave no pocket of serum which will be coagulated with a very small quantity of the picric acid and hinder union mechanically. The solutions of picric acid can be depended on as germicidal and are recommended by Mitchell for skin disinfection because of this property and the one of penetrability.

Journal of Kansas Medical Society, Kansas City

August, XII, No. 8, pp. 301-340

112 Antituberculosis Fight and Some Field Notes. J. J. Sippy, Belle Plaine.
113 Rights of a Child. J. R. Scott, Newton, Kan.
114 Surgical Treatment of Hallux Valgus, Associated with Bunion. J. L. Grove, Newton.
115 Medical Education, Professional and Lay. W. A. Klingberg, Elmo.
116 Open Treatment of Fractures. J. T. Axtell, Newton.
117 Use of Calcium Chlorid as Prophylaxis Against Hemorrhage in Typhoid. N. E. Wilson, Douglas.
118 Treatment of Typhoid. W. C. Chaney, Independence.

Southern Medical Journal, Nashville, Tenn.

August, V, No. 7, pp. 439-510

119 *Eradication of Malaria. J. H. White, New Orleans.
120 American Society of Tropical Medicine: Secretary's Report. J. M. Swan, Rochester, N. Y.
121 *Malarial Hot-Bed Within Sight of National Capital. T. W. Jackson, Fort Washington, Md.
122 *Possible Etiologic Factors in Malarial Recurrences: Significance of Such Cases and Their Treatment. G. E. Henson, Crescent City, Fla.
123 Pernicious Malaria with Cerebral Symptoms, Resembling Heat Stroke, with Report of Cases. B. H. Booth, Drew, Miss.
124 Some Side Lines in Tropics. I. Dyer, New Orleans.
125 New Treatment of Pellagra, with "Organo-Mineralized Radio-Activated Serum of Dr. Jean Nicolaidi, Paris, France. J. Nicolaidi, Paris, France.
126 *Clinical Aspects of Pellagra Question. C. H. Lavinder, Washington, D. C.
127 Intestinal Parasites of North Mississippi. L. Kohlheim, Saltillo, Miss.
128 Simple Methods of Differentiating Disease-Bearing Insects. C. S. Ludlow, Washington, D. C.
129 Some Fallacies in Laboratory Diagnosis. C. Wellman, New Orleans.
130 Relation of Rat to Public Health. E. W. Warren, Palatka, Fla.

119 and 121. Abstracted in THE JOURNAL, July 27, pp. 297 and 299.

122. Abstracted in THE JOURNAL, December 2, p. 1861.

126. Abstracted in THE JOURNAL, May 11, p. 1472.

Medical Record, New York

August 24, LXXXII, No. 8, pp. 323-368

131 Clinical Recognition of Syphilitics. W. W. Graves, St. Louis.
132 Importance of History in Diagnosis of Incipient Tuberculosis. J. M. Cruice, Philadelphia.

133 Coronary Sclerosis with Special Reference to Gastric Symptoms. I. W. Held, New York.
134 Medical Supervision of School Children in South Manchester, Conn. T. G. Sloan, South Manchester, Conn.
135 Orgyia Leucostigma; Factor in Causation of Ophthalmia Nodosa. G. W. Beatty, Brooklyn.
136 Phosphoproteins in Diet. F. Von Oefele, New York.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

Glasgow Medical Journal

August, LXXVIII, No. 2, pp. 81-159

1 Chronic Ovarian Pain as Illustrated in Record of Case Finally Treated by Double Oöphorectomy. A. W. Russell.
2 *"Tunnel" Skin-Grafting: New Method of Covering Raw Surfaces with Epithelium. A. MacLennan.
3 Successful Removal of Large Retroperitoneal Sarcoma, with Method and Treatment. D. Duff.
4 Primary Carcinoma Arising from Bronchus in Tubercular Lung. M. McIntyre.

2. "Tunnel" Skin-Grafting.—In many cases of burns the surfaces seem never to be ready for grafting, and so the matter is delayed till by the lapse of time and the applications of very frequent dressings the surface to be covered gets more or less clean. It is especially in those unfavorable cases that MacLennan thinks his method is so applicable. The usual measures to get as ideal a surface as possible are not neglected, but too much time should not be allowed to elapse before an attempt is made to get an epithelial covering over the raw surface. The steps of his operation are as follows: The day previous the skin to be transplanted is washed with soap and nailbrush well soaked with methylated spirit and covered with a dry sterile dressing. Before removing the graft the skin is again rubbed with spirit, and dried with sterile gauze. The graft may be a mere shaving, or be the entire thickness of the skin. The subcutaneous fat, when the whole skin is taken, is not raised with the graft, and may, or may not, require to be subsequently excised before the wound is closed with a continuous silkworm suture. The excised skin should be placed in saline, and the wound closed before the hands, etc., become soiled during manipulation about the septic surface. The graft is then cut into little strips a quarter of an inch wide and about three-fourths of an inch long. The ulcerated surface is then prepared for the graft by tunneling beneath the granulations with a pair of forceps or other suitable instrument. The tunnel should be just wide enough to lightly compress the graft, and long enough to cover in the ends. If wide strips be employed too much of the granulation layer is raised, and it sloughs too soon, certainly before the graft has taken firm root. The depth of the tunnel will depend on the breadth of the strip and on the quality of the granulations. The deeper the tunnel the more likely is the graft to become firmly attached before the protecting granulation layer disappears. The points of the forceps protruding through the other end of the channel grasp the skin-strip, and by withdrawing the forceps the graft is drawn into the tunnel, and there left. Bleeding is often profuse, but if the passage be made of the proper size the graft plugs it and inhibits the oozing; if still bleeding a little light pressure will stop it. In some vascular parts it is advisable, if possible, to perform the maneuver after the region has been rendered anemic by the Esmarch's bandage. The graft comes to lie in a little cell embedded in blood-clot, and under the surface protected from contact with the dressing. The tension of the superimposed granulations keeps the graft in contact with its bed to which it is intended it shall adhere. The graft is pulled into the tunnel, made by a knife or other suitable instrument; when firmly fixed the superimposed bridge of scar tissue is divided. After such a plan of grafting the dressings take place irrespective of the grafts, and in this way the ulcerated surface may be kept clean, and septic absorption minimized.

Journal of Tropical Medicine and Hygiene, London

August, XV, No. 15, pp. 225-240

5 Speculations on Life-History of Schistosomum Hematobium. F. Milton.
6 Mongolian Birth-Marks. L. G. Fink.

Lancet, London

August 10, II, No. 4641, pp. 351-424

7 Some Points in Decline of Birth-Rate and Death-Rate. Sir S. F. Murphy.
8 *Diagnostic and Prognostic Value of Leukocyte Counts in Cirrhosis of Liver. L. Rogers.
9 Surgical Tuberculosis: Its Needs and Treatment. H. J. Gauvain.
10 *Mercurial Administration: Some Uncommon Methods in Treatment of Syphilis. D. Freshwater.
11 *Vascular Symptoms in "Cervical" Rib. T. W. Todd.
12 Multiple Gummata with Separation of Principal Lobes of Liver. J. J. Jervis and A. L. Dykes.
13 Congenital Absence of Gall-Bladder Associated with Imperfect Development of Pancreas and Imperforate Anus. H. Blakeway.
14 Industrial Employment of Married Women: Its Influence on Birth-Rate and Sex Ratio at Birth. H. R. Jones.
15 Neuron. H. Campbell.

8. Leukocyte Counts in Cirrhosis of Liver.—Rogers has continued his observations on the blood changes in cirrhosis of the liver, and the results confirm, and in some respects extend, the conclusion that leukocytosis is common in ordinary cirrhosis of the liver, a high degree being of immediate very bad prognostic significance. On the other hand, a marked leukopenia is diagnostic of the disease being secondary to kala-azar. It appears that a relative increase of the white corpuscles is of great immediate prognostic value. Five of the nine patients showing an actual leukocytosis died within a short period of time, while in the six patients showing only a relative leukocyte increase four also died while under treatment in hospital. Thus, out of a total of fifteen patients showing either an actual or relative leukocytosis no less than nine, of 60 per cent., died within a short time, while the remainder were discharged from hospital "relieved," mostly without any improvement in their condition. On the other hand, out of nine cases with no increase in the leukocytes, even of a relative degree, and in which kala-azar was not the primary disease, there was only one death, or 11 per cent., the fatality in that case, moreover, having been from a complicating bronchitis. Even among the eight kala-azar cases only two terminated fatally while under observation, so that including them there were still only three deaths in hospital, or 17.65 per cent., among seventeen patients with normal or diminished leukocytes. As most of these patients were in hospital from one to three months, and some of them showed improvement as a result of medicinal treatment, it is clear, Rogers says, that, except in the kala-azar cases with marked anemia or daily fever, surgical procedures might safely have been adopted in those with recurring ascites after repeated tappings, and who thus did not appear to be likely to completely recover under purely medical treatment. On the contrary, several of the patients showing leukocytosis died within a short time of its discovery, although clinically indistinguishable from many of the more favorable cases with normal leukocytes, and had they been operated on only a disappointment would have resulted. In seven out of the nine cases in which an actual leukocytosis was found, from 80 to 93 per cent. were polynuclears, the two cases showing over 90 per cent. being both in a cholemic state which rapidly ended fatally. This polynuclear leukocytosis points to a terminal bacterial infection, very possibly due to the bacillus coli comunis. In the kala-azar cirrhosis cases a marked degree of anemia was always present, while the proportion of white to red corpuscles was usually reduced to much below the normal figure of about 1 to 666. The occasional absence of a marked relative leukopenia is due to the fact that cirrhosis is a very late complication of kala-azar, only ensuing after the patient has suffered from fever for several years, and has to some extent become immune to its effects, and partly due to the frequency of dysenteric complications, which tends to increase the leukocytes.

10. Mercurial Administration.—Either the intramuscular injection or the inunction treatment is believed by Freshwater to be by far the most satisfactory way of treating syphilis and least liable to be followed by relapses. For the ordinary routine treatment of syphilis, he prefers intramuscular injection; it is more convenient and cleanly, and does not take much time during the day, but in nervous lesions

following on late syphilis, e. g., tabes, the inunction treatment is as a rule more satisfactory, the results being sometimes marvelous. Freshwater says that treatment by the mouth should only be carried out when it is not possible to give injections or inunctions; it is certainly often useful to give mercury by the mouth between the routine courses of injection. The intravenous method is better left alone except in very severe cases in which other means have failed, and in acute lesions of the ophthalmic apparatus in which there is danger of loss of sight. Treatment by means of the "mask" is the most satisfactory method of introducing the mercury by respiration; it is certainly very suitable as an alternative method to the oral administration, being cleanly, simple to carry out, and effective. The same applies to the "mercurial bib," but somewhat better results are obtained with the mask; the bib is very suitable for children. Suppositories offer a good alternative method and may be continued off and on for a long time; they are *par excellence* the simplest method of giving mercury secretly when it is necessary. Fumigation is excellent for chronic lesions if used with a simple apparatus, but where it is not possible to carry out this, the application of a mercurial plaster will ofter cause a chronic lesion to heal. Baths are somewhat dangerous and unreliable, but may be employed where a syphilitic lesion is complicated with a parasitic one. The mask is a flexible wire contrivance covered with a double layer of gauze, which is impregnated with 8 gm. metallic mercury. The mask is attached to the face by means of two tapes tied round the head; thus the mask fits over the mouth and nose, and the vaporized mercury is inspired. A course of treatment should be continued for six weeks, the mask being worn during sleep. A single mask is sufficient for ten days treatment; it is worn in one position for five days, then turned so that the upper portion which has been over the nose is brought over the mouth for the next few days, and is then discarded. The bib consists of cotton-wool impregnated with an ointment containing 90 per cent. mercury. These chest protectors or bibs are made double, that is to say, there is a part to go over the chest and one to go over the back, joined with straps which fit over the shoulder. They answer very well as a mild mercurial treatment; they should be worn day and night until they show signs of turning white, when they should be discarded and a new one obtained. They can be used over an indefinite period as a mild mercurial course.

11. **Vascular Symptoms in "Cervical" Rib.**—In the condition known as cervical rib, Todd says that any explanation of the vascular phenomena may be found inadequate if it depends only on direct mechanical pressure on the subclavian artery. Clinical and anatomic evidence suggest that the vascular symptoms may be trophic in character and caused by a lesion of the sympathetic fibers in the lower part of the brachial plexus. Certain anatomic facts indicate that damage may occur to the sympathetic fibers to the arm in the situation where a lesion of the spinal fibers is likely to occur in cases of cervical rib. The anatomic disposition of the parts around the subclavian artery as it passes from thorax to axilla indicates that this cannot be the site of injury to the vessel or to sympathetic nerves surrounding it.

19. **Treatment of Nevi.**—During the past two years and a half Bunch has treated over 2,000 nevi by solid carbon dioxid, apart from other skin diseases. For stellate, capillary, cavernous and flat pigmented nevi, he says, the method is excellent, and gives most satisfactory results. For linear nevus and nevus verrucosus, where there is much thickening and warty growth, it is not so good, but these cases are, of course, very rare. For port-wine stains (*taches de feu*) it depends how far the corium and underlying structures are involved; the most unsatisfactory cases are port-wine stains with a nodular, irregular surface and warty projections, and for these there is no really satisfactory method of treatment. But for the vast majority of nevi, Bunch is convinced there is no more effective, satisfactory and painless remedy, nor one which gives such uniformly good results.

21. **Treatment of Syphilis.**—McDonald emphasizes the fact that every case must be treated individually, and no laws made as to how many injections this or that stage of the disease requires. A patient must be treated as early as possible, and the treatment should not be stopped until the patient is cured. A cure can only be said to occur when the Wassermann reaction is negative within a short interval of stopping treatment. Finally, the treatment required can be accurately gauged only by making examinations of the blood at frequent intervals after each injection.

24. **Skin Diseases in Relation to Heart Disease.**—Clinical observation has convinced Walsh that a large number of chronic and recurrent skin eruptions are associated with disease of the heart, and that unsuspected organic heart trouble is comparatively common among patients attending a skin hospital. Prognosis in skin diseases largely depends on the state of the heart, therefore attention to the circulation is imperatively demanded in a large number of skin affections. The success or failure of much of skin therapeusis depends on the attention paid to the circulation. The circulatory inadequacy which determined the onset and duration of many chronic or recurrent skin eruptions might likewise affect internal organs. What is called "idiosyncrasy" might in many cases simply describe a pathologic reaction, natural or acquired, to moderate traumatism. In this way the the irregular incidence of trade and of drug eruptions might in many cases be explained, predisposition simply being another name for central cardiac inadequacy and disturbed balance of capillary circulation. In all cases of delayed healing or of chronic skin disease the state of the circulation should be carefully investigated. When it is proposed to administer any drug, such as mercury or arsenic, known to act as an organic irritant, the possession of a normal or a fully compensated central circulation should be regarded as a *sine qua non*. The delayed healing of wounds and the persistence of inflammatory conditions, external or internal, often affords a clinical test of cardiac inadequacy more delicate than the shortness of breath, palpitation and other ordinary evidence described in the text-books. The dermatologist who wished to do justice to himself and his patients would have to keep a constant eye on the heart and its treatment in relation to diseases of the skin.

British Medical Journal, London

August 10, II, No. 2693, pp. 285-344

16 Physics and Biochemistry in Relation to Dermatology. W. G. Smith.
17 Acne and Seborrhea, Their Causation and Treatment. A. Whitfield and R. Sabouraud.
18 Sporotrichosis. L. de Beurmann.
19 *Treatment of Nevi, Based on More Than Two Hundred Cases. J. L. Bunch.
20 Types of Dermatitis Seborrheica. G. G. S. Stopford-Taylor.
21 *Rational Method of Treating Syphilis. J. E. R. McDonagh.
22 Vacuum Electrode in Neurodermitis. J. G. Tomkinson.
23 Papilliform Lesions (Lymphangiomata) of Scrotum. F. C. Madden.
24 *Chronic and Recurrent Maladies of Skin in Relation to Heart Disease. D. Walsh.
25 Systematic Study of Morbid Conditions of Nails. G. N. Meachen.
26 Sebaceous Carcinoma and Its Relation to Rodent Ulcer. L. Savatard.
27 Fibrosarcoma on Lupus Scar Tissue. L. Savatard.
28 Xanthoma Multiplex. W. C. Oram.

British Journal of Children's Diseases, London

August, IX, No. 104, pp. 337-384

29 Infantilism with Chronic Interstitial Nephritis; Report of Two Cases. A. E. Naish.
30 Saline Solution in Epidemic Diarrhea. J. R. Mackenzie.
31 Case of Nodular Leukemia. G. R. Ward.
32 Appendicitis in Children. A. Mitchell.
33 Herpes Zoster by Contagion. S. Veras.

Presse Médicale, Paris

July 17, XX, No. 58, pp. 605-612

34 Spontaneous Amputation of the Appendix. P. Delbet.
35 Bone Graft After Removal of Bone Tumor. (Transplantation libre et tumeurs des os.) J. de Gouvea.

Revue Médicale de la Suisse Romande, Geneva

June, XXXII, No. 6, pp. 421-500

36 *Extra-Uterine Pregnancy at Term; Death from Ileus a Few Days After Extraction of Macerated Child. (Grossesse extra-utérine à terme.) C. Thelin.
37 Mixed Cancer of the Mamma. (Les sarco-carcinomes du sein.) H. Perrier.

36. **Extra-Uterine Pregnancy at Term.**—The young woman had previously had a protracted abortion, but her second pregnancy was apparently normal until the eighth month, when symptoms developed suggesting typhoid or peritonitis from an extra-uterine gestation. A large macerated fetus was found in a great cavity above the uterus, walled off from the abdominal cavity by a membrane reaching from the abdominal wall near the umbilicus to the rectum. The genital organs below seemed to be intact except for a patch of pressure necrosis in the fundus of the uterus. Conditions seemed to render a primary abdominal pregnancy most probable.

Deutsche Zeitschrift für Chirurgie, Leipsic

July, CXVII, Nos. 3-4, pp. 207-404

38 The Arteries in the Skin. (Die Hautarterien des menschlichen Körpers.) F. Walcker.
39 Treatment of Fracture of the Femur. (Zur Behandlung schwieriger Oberschenkelbrüche.) Vorschütz.
40 Laceration—Fracture of the Lesser Trochanter. (Die isolierte Abrissfraktur des Trochanter minor.) Vorschütz.
41 *Omentopexy; Twelve Cases. (Zur Frage der Talma-Operation.) Goetjes.
42 Gunshot-Wounds of the Pancreas. (Pankreasschussverletzungen.) H. Luxembourg.
43 Nine Permanent Cures After Resection of the Tongue for Cancer. (Einige Dauerheilungen nach Zungenkrebsoperationen Rezidiv oder neue Geschwulst.) B. Riedel.
44 Condition Twenty-Nine Years After an Operative Reduction of Dislocation of the Hip-Joint. (Jetziger Befund nach 1 blutiger Reposition einer Luxation spont. coxae vor 29 Jahren.) B. Riedel.
45 Slow Progressive Destructive Process in an Extremity; Four Cases. (Die langsam zur Vernichtung einer Extremität resp. des Lebens fortschreitende Zerstörung von Haut und Unterhautzellgewebe.) B. Riedel.
46 Sprain of the Knee with Laceration of Middle Lateral Ligament. (Kniegelenksverstauchung und Abriss des medialen Seitenbandes.) P. Ewald.
47 Operations to Relieve Pressure on the Brain; Eleven Cases. (Erfahrungen über die Dekompressiv- Trepanation und den Balkenstich nach A. von Bramann beim Gehirndruck.) von R. Rydigier.
48 Gasserectomy; Two Cases. (Zur Exstirpation des Ganglion Gasseri.) von R. Rydigier.
49 Section of the Posterior Spinal Nerve Roots for Spastic Paralysis; Three Cases. (Erfahrungen über die Resektion der hinteren Rückenmarkswurzeln bei spastischer Lähmungen.) von R. Rydigier.
50 Isolated Fracture of the Sella Turcica. (Isolierter Abbruch der Türkensattellehne.) Siebert.
51 Olecranon and Occiput Spurs. (Spornbildung.) P. Esau.

41. **Omentopexy.**—Goetjes has performed the Talma operation in twelve cases of rebellious ascites. In seven of the cases the ascites returned and the patients succumbed after an interval ranging from six weeks to a year or two. In the five other cases the results of the operation were excellent. In one the cirrhosis was probably of syphilitic origin; the patient is still in the best of health after seven years. Another patient required occasional tapping for a time, and then outgrew the tendency to ascites so that the man now, two years later, is attending regularly to his business as a brewer and restaurant-keeper. Another patient died after seven months and necropsy revealed a subphrenic abscess. Goetjes calls this a tardy operative fatality.

Therapeutische Monatshefte, Berlin

July, XXVI, No. 7, pp. 469-548

52 *Emphysema of the Lungs. R. von den Velden.
53 Does Digitalis Act on the Vessels? (Haben therapeutische Digitalisgaben Gefässwirkung?) R. Gottlieb. (Bemerkungen zu vorstehender Abhandlung.) W. Heubner.
54 Efficacy of Baths and Air Douches in Treatment of Pure Neuroses of the Heart. (Zur Diagnose und Behandlung der reinen Herzneurosen.) M. de la Fuente.
55 Propaganda for Reform. (Zur Arzneimittelliste. Reformbestrebungen in England. In Nordamerika. Zur Frage des Namenschutzes. Fabrikant und Arzt. Concordia medica.) W. Heubner.

52. **Treatment of Emphysema of the Lung.**—Von den Velden remarks that anatomic emphysema of the lung is rarely demonstrable clinically with any exactness but that this, to a certain extent, is of no moment. The emphysema is not a primary affection but is the result of disturbances in the mechanism of the thorax, either in the innervation controlling respiration or in the bone and cartilage framework of the chest. When the respiration is affected by nervous or chemical influences, inspiration is deepened and one inspiration follows so close on another that the slower work of expiration is hindered, particularly as the mechanism controlling expiration is not so strong as that for inspiration. Freund has called attention to the importance of rigidity of the upper part of the chest walls as a factor in emphysema, and the causal importance of bronchitis and asthma has long been recognized. Treatment of emphysema should aim to remove the cause by increasing the expiration, training in deep abdominal breathing, with special emphasis on expulsion of the air. It is amazing, Velden remarks, how little attention is paid to the breathing, especially the neglect of the factors for costal respiration. The young should be trained to breathe properly as a prophylactic measure against tuberculosis and emphysema. The aim is to mobilize the chest and keep it mobile so that the ventilation may be thorough. Velden doubts whether mechanical aids are of much account in training people to breathe properly or aid in treatment of emphysema. The personal cooperation of the physician in the exercises, a certain psychotherapy, are, he thinks, far more effectual. The mechanical devices confirm the patient in the idea that he does not have to exert volitional control of his breathing, which is the vital point in training at first. His experience confirms the great benefit from doing these breathing exercises in a full bath in cases of acute overdistention; the ventilation of the lungs proceeds much better under these conditions if the chest walls are not too rigid. Chronic bronchitis as a causal factor in emphysema seems to benefit by iodid but it must be given cautiously, for fear of toxic action on the thyroid, in intermittent courses, carefully watching the circulation and metabolism. If signs of a special toxic action in the larynx and bronchi become evident, it can be arrested by energetic calcium treatment, giving 4 or 5 gm. of calcium lactate in the course of the day. The methods in vogue to impede inspiration and promote expiration, such as inspiration of compressed air and expiration into rarefied air; Bruns' negative pressure respiration, and Kuhn's suction mask, owe their main efficacy to the fact that the patient is thereby trained in regular careful breathing. The suction mask has a curative influence on bronchitis by the hyperemia it induces in the bronchial mucosa. In some cases the emphysema is evidently the result of disturbances in the heart action alone or supplementing other factors; and heart tonics may be indicated although it must not be forgotten that the suction pump of the organism is not the heart but the thorax. Mobilization of the thorax walls and ample ventilation of the lungs may restore the heart action to normal. When the venous circulation is defective, throwing extra work on the right heart, with congestion in the abdominal vessels, transient benefit may often be realized by tying off the limbs as a bloodless substitute for venesection. This is proving a useful means to influence favorably states of acute weakness of the right and left heart manifesting itself in pulmonary edema. Velden has confirmed by extensive animal experimentation the effectual action of this method of retaining the blood in the periphery. The heart grew smaller, both the arterial and venous blood-pressure dropped, etc., and patients with emphysema disturbances felt relieved as soon as their limbs were thus excluded from the general circulation. Tornay has reported similar benefit in congestion from cirrhosis of the liver, and Lilienstein has recently devised what he calls a "phlebostat" to accomplish this bloodless bloodletting. (It was described in THE JOURNAL, March 30, 1912, p. 982.) Velden consequently commends this measure as a simple and harmless means to relieve extra strain on the venous heart. It can be applied with any simple constricting band or tourniquet, to both arms and legs at the same time, applying the constriction so as to arrest the venous circulation but without interfering with the arterial circulation. By this means it is possible to drain as much as a liter of arterial blood into the limbs and hold it there. After half an hour the constricting bands are gradually loosened. The procedure can be repeated two or three times a day and both objective and subjective benefit be realized. He warns that in treating emphysema it is important to distinguish which are the main factors as an operation to mobilize the chest wall will do no good if the chest is already elastic, and measures to relieve the heart will fail if the trouble is due to the rigid chest walls.

St. Petersburger medizinische Zeitschrift

July 14, XXXVII, No. 13, pp. 193-204

56 Internal Causes of Skin Diseases. (Innere Ursachen bei Hautkrankheiten.) M. Hirschberg.
57 Banti's Disease. (Zur Kasuistik des Morbus Banti.) O. von Dehn.

Wiener klinische Wochenschrift

July 18, XXV, No. 29, pp. 1111-1146

58 Biologic Method for Differentiation of Acid-Fast Bacteria. II. (Ueber Auflösung der Tuberkelbazillen und anderer säure fester Bakterien im Organismus.) R. Kraus and G. Hofer.
59 Experimental Mercurial Poisoning. (Zur Vergiftung mit Quecksilber.) S. Skudro.
60 Improved Technic for the Meiostagmin Reaction. R. Köhler and A. Lager.
61 Neuritic Complications in Cranial Nerves in Early Stage of Syphilis. (Zur Kenntnis der Hirnnervenstörungen im Frühstadium der Syphilis, speziell nach Salvarsan.) A. Zaloziecki and R. Frühwald. To be concluded in No. 30.
62 Prophylactic Injection of Oil into the Peritoneum Not Effectual. (Kann man durch Oel die Entstehung peritonealer Adhäsionen verhindern?) J. Novak.

Gazzetta degli Ospedali e delle Cliniche, Milan

July 14, XXXIII, No. 84, pp. 865-880

63 Edema. F. Bottazzi.
64 Pathogenesis of Intraperitoneal Hernia of the Cecum. L. Paglieri.
65 Trophic Action of the Nervous System. (Sull'azione trofica del sistema nervoso.) A. Stefani.

Policlinico, Rome

July, XIX, Surgical Section No. 7, pp. 289-336

66 Pathogenesis of Large Femoral Hernia. (Sulla patogenesi delle ernie crurali voluminose con riguardo agli esiti lontani delle peritoniti ed epipioiti del sacco.) O. Cignozzi.
67 Pneumatic Tourniquet. (Studio sperimentale e clinico sopra l'applicazione di un apparecchio emostatico speciale.) E. Pomponi.

Riforma Medica, Naples

July 13, XXVIII, No. 28, pp. 757-784

68 *Disturbances in the Circulation After Muscular Exertion in the Tuberculous. (Perturbamenti circolatorii provocati dal lavoro muscolare nei tubercolosi.) E. Tedeschi.
69 Estimation of Functioning of the Pancreas from Dosage of Amylase in the Feces. (Misura della secrezione pancreatica col dosaggio dell'amilase fecale.) G. Libertini.

68. Circulatory Disturbances in the Tuberculous After Muscular Exertion.—Tedeschi applied certain mild physical tests to determine the action of muscular effort on the blood-pressure, pulse, etc. He records the findings in seven healthy persons and then in twenty-six tuberculous persons. Some of the latter behaved like normal individuals, but in the majority the maximal blood-pressure rose and also the minimal, while the pulse-rate became faster. The tuberculous felt a sense of fatigue much sooner than the controls. The phenomena observed in the tuberculous indicate a transient increase in the tonicity of the vessels. These unstable and transient changes in the tonicity of the vessels suggest further that the vasomotor system in the tuberculous is subject to abnormal stimulation which may elicit abnormal and exaggerated reactions at times.

Hygiea, Stockholm

June, LXXIV, No. 6, pp. 625-736

70 Andreas Vesalius. E. Holmgren.
71 *By-Effects of Salvarsan. (Salvarsanets biverkningar.) J. Strandberg. (Salvarsan och acusticus.) N. Witt. (606, salvarsan.) M. Möller.
72 *Nodding Spasm in Children. (Om salaamkramp hos barn—Epilepsia vel eclampsia nutans.) K. O. af Klercker.
73 *Alcohol and the Community. (Alkoholen och samhället. Betänkande angående de samhällsskadliga inflytanden bruket af rusdrycker medför jämte förslag till systematiska åtgärder för deras bekämpande i Sverige.) A. Key-Aberg and Others.

71. By-Effects of Salvarsan.—Strandberg found evidences of relapses affecting the nervous system in fifteen syphilities treated with salvarsan; 161 of the patients were under observation for only four months, and it is possible that the true number is even larger. The acoustic or optic nerves were the ones affected and the symptoms of neuritis subsided under continued salvarsan treatment in some but not in all. One of the patients with syphilitic papillitis found his symptoms aggravated under the salvarsan so that after two injections mercury and iodid were substituted. Another patient was given elsewhere two intravenous injections of salvarsan with a three weeks' interval. Two months later facial paralysis developed and the man of 31 became totally deaf and with impairment of vision from bilateral papillitis. No improvement was realized from three weeks of mercurial treatment, with iodid; the Wassermann reaction was negative. Strandberg accepts these neurorecurrences as too serious to be lightly dismissed, and says that the question as to the toxic action of salvarsan has not been decided by the evidence accumulated to date.

Witt reports nine cases of neuritic complications after salvarsan, affecting the acoustic nerve, and he insists on the necessity for expert examination of the ear before applying salvarsan in treatment. If a tendency is found to progressive otitis and catarrh, otosclerosis or acoustic neuritis, or if there is an inherited burden of deafness, he urges careful weighing of the pros and cons before starting a treatment which may localize the relapse in this organ even if it does not exert a toxic action on it.

72. **Nodding Spasm in Children.**—Af Klercker reports a typical case of salaam spasm in a little girl between 3 and 4. The nodding spasm had developed at the age of 2 months, without known cause except digestive disturbance; thre was no innerited taint. At first the symptoms were ordinary convulsions and spasm of the glottis but they gradually assumed the nodding type. This gradual onset was observed in a number of the cases. He summarizes fifteen others from the literature, and tabulates them for comparison. Treatment can only be along the lines as for epilepsy; bromid is the main reliance, and he noted a favorable influence in his case and two other writers have mentioned the same, but Lange and Finkelstein have had a case each in which no benefit was apparent from bromid. The ultimate outcome was total idiocy in nearly all the cases on record and this may be anticipated within a few years. The earlier the nodding spasm develops, the graver the outlook. No case of actual recovery seems to be on record but there may be long intervals of freedom from the spasms and they may in time assume more the character of epileptic seizures. No survival beyond 17 is known.

73. **Alcohol and the Community.**—A committee was appointed by the Swedish Medical Association to study the question of alcohol from the medical, sociologic and legislative points of view. Their report fills 392 pages and is a valuable practical contribution to the subject. It concludes with suggestions for legislative action. Three members of the committee report in detail their respective cases of alcoholic psychoses and alcoholism in general, bringing out the factors which led to the habit of liquor drinking as well as the medical aspect of the cases, heredity, etc. A classification of habitual drinkers is proposed and the principles outlined for rational solution of the liquor problem.

Ugeskrift for Læger, Copenhagen

July 4, LXXIV, No. 27, pp. 987-1016

74 *Summer Diarrhea in Children and Its Treatment. (Børnekolerinen og dens Behandling.) C. E. Bloch.

74. Summer Diarrhea in Infants.—Bloch comments on the epidemic of summer diarrhea last year at Copenhagen. Notwithstanding the extreme heat, the sickness was comparatively benign, only 100 of the infants dying during the month of August although there were over 3,000 sick. In his hospital practice he had fifty-eight exceptionally severe cases but only six of the infants died, a mortality of 10 per cent. He ascribes this favorable outcome to his method of feeding the infants. Nothing but water was allowed until the alarming symptoms had subsided, the coma, collapse, high fever and albuminuria; this generally took from one to three days. Then he gave the infant the ordinary milk mixture but without the usual 2 per cent. of cane sugar, diluting the milk with four parts water, then with three parts, and then two parts. This was generally borne by the end of the first day and he kept this up until all signs of intoxication had disappeared and the infant was ready to drink spontaneously. Then he returned to the sugar, one part milk to two parts barley water. The diluted milk without sugar seems to answer the same purpose as "albumin milk."